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A detailed space utilization study of Eastern Washington State College, which focuses attention on the utilization of instructional facilities—general classrooms and teaching laboratories. The basic definitions and classification of space, as well as the general techniques and measures of utilization used in the study, were adapted from those presented in the Russell-Doi "Manual for Studies of Space Utilization in Colleges and Universities" (1957). Facts are supplemented by explanation and interpretation. More than a third of the report is devoted to conclusions and recommendations.						
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**PHYSICAL PLANT INVENTORY
and UTILIZATION STUDY**

EASTERN WASHINGTON STATE COLLEGE

Cheney, Washington

1962-1963

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education

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FOREWORD

A complete space utilization study is long and involved. Much detail is of necessity included. While it might appear that such detail is not required, a more cursory study could be a waste of time and effort.

Individual room data, properly interpreted, provides much valuable information which is of use, not only to schedule makers, but, to academicians as well.

Utilization data require a great deal of supplementary explanation and interpretation. To provide the bare facts with no background material, or analyses, would leave them relatively meaningless. The study must be read thoroughly. What appears to be undue repetition was so intended. Repeated references to certain facts are made in order that the reader may get essential concepts fixed firmly in mind.

The conclusions drawn and recommendations made were arrived at after some four months of intensive study.

It is not expected that this report will receive universal endorsement. If the problems raised lead to coordinated action on the issues involved, then perhaps the study has fulfilled its purpose.

Wayne W. Loomis
Space Utilization and Campus Planning

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INTRODUCTION

The student body in America's colleges is growing so rapidly that it will soon outstrip the existing space for learning in today's classrooms and laboratories.

There are three conventional ways of dealing with this problem.¹ One, shrink or limit the student body so that it will fit the present available space - a solution inconsistent with the aspirations and needs of our democratic society, although governing bodies may force us to this solution through their failure to appropriate sufficient funds to meet the demands for higher education. Two, increase the facilities to accommodate the growth - a solution, if fully executed, out of keeping with the size of either private giving or the public purse. Three, increase the efficiency of use of existing space to make room for more students, thereby reducing the quantity of new space to be built.

It is with the third solution that this report is particularly concerned.

Only an informed look into the use of existing facilities can reveal whether these facilities are being used efficiently and whether they can be employed to yield additional use so as to reduce, or even render unnecessary, the need for new buildings. That informed look, in the jargon of educational planners, is a "space utilization study."

It has been only in very recent years that college administrations have turned to space utilization studies seeking answers to their problems of burgeoning enrollments and rapidly dwindling space. Even with money available, the more fortunate institutions have experienced difficulty in planning and constructing new facilities as rapidly as they are needed. Therefore, space utilization studies have proven to be valuable tools for showing the extent of the use of present facilities, and indicating in what areas additional use should be sought. A space utilization study does not necessarily furnish any answers - it merely brings the

¹To Build or Not to Build, Educational Facilities Laboratory, New York, 1961, p.3

problems into the open where they can be attacked.

Two fairly recent studies in the field of space utilization furnish comparative norms which have proven to be useful to other institutions seeking to do studies on their own campuses. The first study of note in this area was reported in the Russell-Doi Manual for Studies of Space Utilization in Colleges and Universities.¹ The other, a more recent study, provides norms for 60 four year, degree-granting, liberal arts colleges in the north central region of the United States, all of them with enrollments under 3,000.² The data contained in both studies will provide other colleges with a basis for comparing the use of their own plant with the practice and experience of comparable institutions. Also, the interpretation of the data provides guide lines for strategic planning by signaling traps and pitfalls, by pointing up areas that may become critical.

Need For Study

An enrollment projection alone is not sufficient for determining future plant needs. To mathematically decide that an enrollment of 4,000 students will require double the facilities and staff required by 2,000 students is not sound thinking, and it may lead to unwise and unnecessary building expenditures.

In the first place, the need for additional buildings, even if no enrollment increases were planned, would be affected by the character of the existing facilities. Also, change in the characteristics of the student body, methods of financing, and the curricula will all have an effect upon the nature of the future physical facilities to be provided. Therefore, the following studies should be undertaken:

1. A detailed analysis of the present instructional plant to assess its adequacy for the present level of enrollment, as well as an analysis of pres-

¹John D. Russell and James I. Doi, Manual for Studies of Space Utilization in Colleges and Universities, AACRAO; Ohio University, 1957.

²To Build or Not to Build.

ent utilization in order to find out the number of additional students who might be accommodated with better use of these facilities.

2. The adequacy of present facilities is not determined only by their structural character, but also by their adequacy for the instructional program of the college. Thus, a thorough and detailed analysis of the instructional program by the academic planners becomes an integral part of the planning process.
3. Concurrently with the study of the instructional program and the physical plant, there should be undertaken a detailed study of the characteristics of the students who attend and have attended the institution. The Office of the Dean of Students is in the best position to study student characteristics.
4. The fourth area which should be studied concurrently with the first three relates to the financial structure. A careful analysis of the trends in income and expenditure should be made to show the primary source of funds and the proportionate expenditures of these funds for the various functions of the college operation. This area can best be studied by the business manager of the college.
5. The usefulness of these studies for decisions regarding the need for facilities will depend upon interrelating the results of each of the studies, one with the other. Here are some of the broad questions these investigations should answer.
 - A. What are the most productive areas of study for the type of student the college now has?
 - B. What is the rate of attrition? What factors determine this rate, and how may it be modified, if, indeed, it should be modified?
 - C. Is the scope of the present curriculum in keeping with the primary preferences and needs of the present students?

- D. Is the present curriculum too diversified or proliferated for the demand? How is this reflected in the cost of instruction in the specific areas of study?
- E. In line with the objectives and purposes of the college, can the class size be increased in certain areas without jeopardy to the educational effectiveness?
- F. How extensive is the present plant? What proportion of the total plant area is actually given over to the instructional program?
- G. How adequately do the present instructional facilities service the instructional program?
- H. Is the level of utilization of present plant satisfactory, or could a higher level of utilization commensurate with the educational objectives provide facilities for additional students without additional construction?
6. Having established a level of enrollment and the possible future scope of the curriculum--it is not safe to assume that the curriculum will remain static--it is possible to determine the extent of the instructional plant and number of faculty members that will be required. Comparing the new facility needs with the existing plant will determine the extent of new construction that will have to be provided.
7. Assuming that all of this adds up to a need for a new instructional facility, the specific nature of this building must then be determined. At this point, the appropriate faculty and administrative committee, with the assistance of a competent architect, should embark on the determination of the exact type of building required including its size, location and design.

Some of the questions raised above will be answered in the following pages. Other questions will need to be studied further by other groups on the campus. A space utilization study can provide data on the physical plant and the extent of

its use. It cannot provide data on the student body, finances, scope of the curriculum, or the specific nature of new facilities. These can best be determined by curriculum committees and other college personnel.

MEASURES OF USE

The fact that this study focused attention on the instructional facilities is not to be interpreted as implying that other types of space, particularly library, research, and office space, are not in need of study. For two reasons, namely the convenience of studying a portion of a larger problem, and the fact that instructional space in our colleges and universities does account for approximately half of the capital outlay, the present study was limited to the analysis and use of instructional facilities only.

The basic definitions and classifications of space, as well as the general techniques and measures of utilization used in this study, have been adapted from those presented in the Russell-Doi study.¹ New terms, or those having special significance, will be defined in the text at their first use.

The extent of available space for instructional purposes can be expressed in terms of: A. the number of rooms used, B. the number of student stations reported in such rooms, C. the total number of square feet of assignable space in these rooms, D. the number of square feet per full-time equivalent-student (FTE=15 credit hours) enrolled, E. the number of square feet per student station, and F. the number of square feet of space per 100 hours of occupancy.

Perhaps a word is in order regarding the measure "square feet per 100 hours of occupancy." Because this involves a measure of the hours of occupancy, it represents the intensity of use made of the space. For example, if a room has 600 square feet of assignable space in it, and there are an average of 500 student station occupancies during the week, then this 600 square feet is divided by the 500 student station occupancies. The result, 1.20, multiplied by 100 hours of occupancy, yields 120 square feet for those hours of occupancy.

¹ Russell and Doi, Manual for Studies

It should be pointed out that even though this measure does differentiate use of rooms on the basis of the intensity of use, this is done in terms of square feet of space, and therefore there is still need for measures of room-period and student station utilization on the basis of some uniform standard of time. General classroom use (lecture sessions) was measured on a forty hour week basis, 7:40 A.M.--2:40 P.M. classes, five days per week. A longer schedule week was used for teaching laboratories since a substantial amount of the utilization in these rooms occurred after the 2:40 P.M. hour each day. Night time use was not included as part of the regular schedule day use since a block of unscheduled time separates the two programs.

In addition to the measurements of space use discussed above, two other important measures remain to be introduced. The first, room period use, is defined as a room scheduled for part, or all, of a class period. The second measure, student station use, refers to a classroom station occupied for part, or all, of a class period. A laboratory student station occupied for a three hour lab would be registered as three hours of student station use. Thus, the number of hours per week a room is in use, and the number of student stations occupied each hour the room is used, become the two basic measures of utilization. A variety of methods for analyzing and interpreting the data are available. These are presented in following sections of the study.

COMPARISON OF UTILIZATION DATA FOR
FALL QUARTERS 1957-1962

General Classrooms

A general classroom is defined by Russell and Doi as an instructional room used primarily for lectures, recitations, and seminar type meetings where its equipment does not render it unsuitable for classes in other subjects. These rooms are available for general assignment each quarter, and they are used interchangeably by all departments.

Table 1 presents several general indices of space utilization in general classrooms at Eastern Washington State College. Comparable measures are included for the EFL study quoted earlier.

TABLE 1

General Indices of Space Utilization in General
Classrooms, EWSC, Fall Quarters - 1957 and 1962

General Classrooms	Utilization Data for East. Wash. State College			EFL Study
	1957 (1)	1962 (2)	% up (3)	(4)
1. Number of Rooms	38	55	44.7	1,203
2. Number of Students Stations	1,491	2,864	92.0	50,649
3. Assignable Square Feet	32,797	44,681	36.2	813,351
4. Total Rm-Pds Used per Week	759	1,015	33.7	21,173
5. Total Stu-Sta-Hrs Used per Week	18,794	29,076	54.7	481,165
6. Average Rm-Pds per Week per Room	19.0	18.5	- 2.7	17.6
7. Average % Sta. Occupied When in Use	55.0	55.1	0.0	51.0
8. Average Stu-Hrs per Sta. per Week	12.6	10.2	-19.0	9.5
9. Sq. Ft. per 100 Stu-Sta-Hrs	182	154	-15.0	170
10. Average Sq. Ft. per Stu-Sta.	22.0	15.6	-29.0	16.2
11. Enrollment of FTE Students	1,744	2,351	35.0	42,852
12. Square Feet per FTE Student	18.8	19.0	1.0	19.1
13. Stu-Sta-Hrs Use per FTE Student	10.8	12.4	14.8	11.2

Generally speaking, Table 1 indicates that the general classroom facilities available for scheduling increased at a more rapid rate than did the enrollment for the period 1957-1962. For instance, Line 2, Column 3, shows a 92.0% increase in the number of student stations available for use - this increase was much larger than the 35.0% increase in FTE students from 1957 to 1962.

Line 6, Column 2, shows the average room period use per week in 1962 to be 18.5 periods. This means that the rooms are being scheduled about 64.0% of what could be called "standard use" (Russell-Doi Standard: rooms scheduled 29 hours of a 40-hour schedule week). However, the 18.5 average room periods per week at Eastern Washington State College compares quite favorably with the 17.6 average for the 60 colleges in the EFL study (Line 6, Column 4).

Line 7, Column 2, shows that during the periods when the rooms were actually scheduled, an average of 55.1% of the student stations were occupied. However, in order to project a true picture of student use of instructional facilities, it becomes necessary to show the average number of times a student station is occupied each week. Line 8, Column 2, shows the average student hours per station per week to be 10.2 hours for the fall quarter in 1962. The Russell-Doi standard calls for rooms to be scheduled 29 hours of a 40-hour week (72.5%), with 70.0% of the stations occupied during the hours the room is in use. The standard in formula form, $\frac{40 \times 72.5 \times 70}{100} = 20.3$, calls for an average student station use of 20.3 hours per week. Thus, Line 8, Column 2, shows that the average student hours per station per week, 10.2, is actually only about half of the standard 20.3 periods per week. Thus, on the basis of standard use (Russell-Doi Standards), it should be possible for Eastern Washington State College to accommodate almost double the present number of students in its general classrooms. However, as will be shown in a later stage of the report, over twenty percent of the total student station occupancy in general classrooms took place in totally deficient facilities which should be removed from the campus as soon as possible. As long as the deficient facilities are scheduled, their adequacy for meeting the needs of the program must be assumed.

Teaching Laboratories

Russell and Doi define a teaching laboratory as an instructional room equipped for special classes such as shops, home economics rooms, rehearsal rooms in music, chemistry experimentation, art rooms, etc. On the Eastern Washington State College campus, rooms of this type are assigned to a department, and their use is not considered to be interchangeable with other departments. While it would be possible to hold some lectures in laboratory rooms--and this sometimes occurs on this campus--such use would be counted as laboratory usage. It is the nature of the room rather than the nature of the instruction which is used to classify the rooms as either laboratory or general classroom. Thus, speech, which is often of a laboratory nature, is counted as instruction in general classrooms since special equipment and special purpose rooms are not required. Music theory classes can be held in regular classrooms, even though a piano may be required. The presence of the piano in the room does not prevent classes from other departments using the room. Sometimes the location of a room may partially determine whether other departments will use the room--but this will not prevent its being classified as a general classroom available for general scheduling. For instance, the three general classrooms in Cadet Hall are used only by the Military Science division, while the four general classrooms in the Field House are used only by the HPER division. For all practical purposes, these rooms are assigned for the exclusive use of these programs. In the final analysis, the decision as to what constitutes a teaching laboratory often has to be made arbitrarily.

Table 2 provides several general indices of the utilization in teaching laboratories at Eastern Washington State College. The same comparisons used in Table 1 are made here, and, in general, the same interpretations of the data may be used.

TABLE 2

General Indices of Space Utilization in Teaching
Laboratories, EWSC, Fall Quarters 1957 and 1962

Scheduled Teaching Laboratories	Utilization Data for East. Wash. State College			EFL Study
	1957 (1)	1962 (2)	% up (3)	
1. Number of Rooms	28	52	85.7	468
2. Number of Student Stations	658	1,336	103.0	12,436
3. Assignable Square Feet	29,469	52,686	78.7	405,746
4. Total Rm-Pds Used per Week*	386	1,054	173.0	5,054
5. Total Stu-Sta-Hrs Used per Week*	6,620	12,944	95.5	82,490
6. Average Rm-Pds per Week per Room	14.0	20.3	45.0	10.8
7. Average % Stas Occupied When in Use	61.0	44.0	-28.0	57.0
8. Average Stu-Hrs per Sta. per Week	10.1	8.9	-12.0	6.7
9. Sq. Ft. per 100 Stu-Sta-Hrs	445	407	- 8.6	452
10. Average Sq. Ft. per Stu-Sta.	45	39	-13.4	33
11. Enrollment of FTE Students	1,744	2,351	35.0	42,852
12. Square Feet per FTE Student	17	22	29.4	10
13. Stu-Sta-Hrs Use per FTE Student	3.8	5.5	44.7	1.9

*Includes non-scheduled student use as reported by teaching faculty.

Before any interpretations are made of the data contained in Table 2, it should be explained that, whereas utilization computed for general classrooms was scheduled use only, laboratory utilization figures include non-scheduled use as well. Certain laboratory procedures require the participation of students before and after the regularly scheduled class hours. Preparation of materials, setup time, cleanup time, makeup time, and other legitimate demands on the space often means that the laboratory is actually in use much longer than it appears to be on the room schedule. In order to present an accurate summary of total laboratory use, any additional use beyond the scheduled use should be included. Therefore, each teacher of a laboratory subject was asked to estimate, as accurately as possible, all other student use of the room, regardless of whether the use was assigned or unassigned.

Inclusion of non-scheduled utilization data for laboratories tends to distort the calculations to a certain extent. For instance, average room period use for the week, as presented in Column 2, Line 6, shows a greater percent of increase over 1957 than it would have otherwise. However, as stated earlier, the laboratory use as reported in this study more nearly reflects the actual situation to be found in most teaching laboratories. Justifiable criticism can be directed at any study which fails to consider non-scheduled use of rooms.

For the reasons stated above, comparisons of the different sets of data presented in Table 2 should be made with caution. Only as succeeding studies are conducted on the same basis will it be possible to make valid comparisons. Succeeding reports which provide more detailed analyses of the data, by department and by room, follow in later stages of the study.

One final comment might be made about the data contained in Table 2. Because teaching laboratories vary greatly in the types of activities which take place in them, any summary lumping them all together should be viewed as nothing more than just a summary. Science laboratories can no more be compared to music laboratories than they can be compared to general classrooms. Perhaps this partly explains why acceptable "standards" have not been developed for teaching laboratory use. Laboratory use varies so greatly from one department to another, and from one campus to another, that no one, as yet, has come up with a set of standards which can be applied equally to all colleges. Until acceptable standards are developed, each institution should strive for as high utilization of their facilities as they deem desirable under present circumstances.

UTILIZATION IN GENERAL CLASSROOMS FOR FALL QUARTER 1962

Utilization in General Classrooms by Building

Several general indices of utilization in general classrooms were presented in an earlier part of the study. In this section, utilization data for each building will be presented. Use data, by building, and later, by room, makes it possible to define the extent of utilization which takes place in each building. Having this information makes it possible to achieve more efficient scheduling, which in turn will make it possible for the college to accommodate more students as the enrollment increases.

The utilization data for general classrooms were derived by using a forty-hour week as the basic schedule week during which classes are regularly scheduled. Authorities on space utilization recognize that normally one can not expect to schedule a classroom all forty hours of a week, nor can one expect to have every seat in the classroom occupied every hour it is in use. Standards developed by Russell and Doi¹ are quite generally used in utilization studies today.

Using the Doi standards, acceptable utilization rates would be achieved if a general classroom were to be scheduled twenty-nine hours of a forty-hour week. Also, if the percent of average student station use in occupied classrooms reached the seventy percent mark, standard utilization would have been achieved in that area. Thus, standard room-period use would be achieved at Eastern Washington State College providing the percent indicated in Column 4, Table 3, reached 72.5 percent (29÷40). Standard student-station use, as shown in Column 8, would be reached at the 70.0 percent figure.

The totals and averages at the bottom of Table 3 represent total institutional figures.

¹Russell and Doi, Manual for Studies

TABLE 3

SUMMARY OF UTILIZATION DATA, BY BUILDING, IN GENERAL CLASSROOMS, AT EMSC
FALL QUARTER 1962

Building	Number of Rooms (1)	Number of Student Stations (2)	Rm.-Pd. Use, Weekly Basis		Student-Station Use, Weekly Basis			Percent of Possible Station Use When Room Actually in Use***
			Total Room-Periods of Use (3)	% of Possible Room-Period Use by Standard** (4)	Total Student-Station-Periods Occupied (5)	% of Total Station-Periods for Col. 5 (6)	Student Hours per Station (7)	
Science	17	970	357	52.5	9,234	31.8	9.5	45.2
Martin	16	736	217	33.9	7,035	24.2	9.6	70.6
Shewalter	9	716	207	57.5	7,252	24.9	10.1	43.9
C. H.	3	109	42	35.0	1,050	3.6	9.6	68.6
F. H.	4	146	98	61.3	2,837	9.8	19.4	78.2
I. A.	1	30	15	37.5	187	.6	6.2	41.3
Music	2	58	37	46.3	497	1.7	8.6	46.5
Ratcliffe	3	99	42	35.0	984	3.4	9.9	70.7
TOTAL	55	2,864	1,015		29,076	100.0		
AVERAGE			18.5	46.1			10.2	55.1

* Total number of rooms involved

** Del Standard: 71.5% (29 hours of a 40-hr schedule week)

*** Del Standard: 70.0% station occupancy in a scheduled general classroom

The four general classrooms in the Field House represent the highest rates of utilization for any of the buildings on campus containing general classrooms. Column 4 indicates a room-period use of 61.3 percent of the possible room-period use (standard = 72.5%). Column 8 shows the Field House student-station utilization to be 78.2 percent when the rooms are occupied (standard = 70.0%).

Three buildings - Science Hall, Martin Hall, and Showalter Hall - have 80.9 percent of the total utilization in general classrooms for the college. For all practical purposes, these three buildings constitute the general assignment classroom pool. The other five buildings have no general assignment classroom space beyond departmental or divisional needs.

The Russell-Doi Standards call for a room-period utilization of twenty-nine hours of a forty-hour week. Eastern Washington State College, during the 1962 Fall Quarter, had an average room-period use of 18.5 room-periods (average for Column 3) per week. Fifty-three institutions, reported in the study To Build or Not to Build,¹ had an average room-period use of 17.6 hours per week.

Utilization in General Classrooms by Room

General classroom utilization on a building basis was considered in the preceding section of the study. Utilization on a room basis will be presented in this part of the report. The analysis of utilization data on a room basis makes it possible to pinpoint areas receiving low use, and thus suggests locations where additional use should be scheduled.

Two rooms in Showalter Hall, Rooms 217 and 309, were under construction most of the fall quarter, and as a result, they were not included in the general assignment pool of classrooms. There were actually 55 general classrooms available for scheduling during the fall quarter, and utilization data was computed on that basis even though some of the 55 rooms were not scheduled.

Table 4 analyzes utilization data for general classrooms on a room-by-room basis.

¹To Build or Not to Build, ... p. 29.

Building	Room Number	Rm.-Pl. Use, Weekly Basis		Student-Station Use, Weekly Basis		Percent of Station Use When Room Is in Use
		Number of Student Stations (1)	Total Room Periods of Exp. (2)	% of Possible Room-Period Use by Standard (3)	Total Student-Station-Periods Occupied (4)	Hours per Station (5)
Martin	206	80	10	23.0	345	4.3
	207	34	3	7.3	90	2.6
	208	34	15	37.5	605	11.2
	215	30	25	62.5	1,035	20.7
	R-TV	40	16	40.0	196	4.9
Music	109	6	13	32.5	64	10.7
Music Ass.	2(3)	52	24	60.0	433	8.3
Ratcliffe	1	36	21	52.5	540	15.0
	2	31	21	52.5	444	14.3
	3	32	0	0.0	0	0.0
Science	110	24	15	37.5	329	13.7
	113	46	18	45.0	500	10.9
	116	40	20	50.0	524	13.1
	117	34	28	70.0	464	13.6
	118	35	27	67.5	729	20.8
	138	228	8	20.0	958	4.2
	147	32	14	35.0	266	8.3
	151	58	27	67.5	636	11.0
	170	27	22	55.0	212	7.9
	202	90	22	50.0	779	8.5
	207	40	23	57.5	490	12.3
	238	30	26	65.0	446	14.9
	239	80	20	50.0	720	9.0

Building	Room Number	Rm.-Pd. Use, Weekly Basis		Student-Station Use, Weekly Basis			
		Number of Student-Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use by Standard** (4)	Total Student-Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use*** (7)
Science	242	70	21	52.5	635	9.1	43.3
	243	30	17	42.5	199	6.6	38.8
	247	58	26	65.0	911	15.7	60.4
	295	48	23	57.5	436	9.1	39.6
Showalter	105	272	16	40.0	2,744	10.1	63.1
	207	70	30	75.0	959	13.7	45.7
	209A	29	10	25.0	106	3.7	37.0
	217	(Construction)					
	306	74	26	65.0	747	10.1	38.8
	307	76	27	67.5	1,105	14.5	53.7
	308	66	24	60.0	476	7.2	30.0
	309	(Construction)					
	316	49	20	50.0	402	8.2	41.0
	318	50	32	80.0	309	6.2	19.4
	320	30	22	55.0	404	13.5	61.4
TOTAL	* 55	2,864	1,015		29,076		
AVERAGE			18.5	46.1		10.2	55.1

* Total number of rooms involved.

** DoI Standard: 72.5% (29 hours of a 40-hour week).

*** DoI Standard: 70.0% of student stations occupied when the room is in use.

According to the Russell-Doi standards, general classrooms should be scheduled an average of 29 periods per a forty-hour week, and during the time the room is in use, 70% of the student stations should be occupied. Column 6, Table 4, lists the number of student hours per station per week for each general classroom at Eastern Washington State College. According to the Doi standards, it should be possible to attain an average use of 20.3 student hours per station per week in general classrooms.¹ Column 6 indicates the weekly use of stations in scheduled rooms ranged from a low of 2.6 hours per station per week, to a high of 26.5 hours per station per week. The average for all general classrooms, including five rooms available but not scheduled, was 10.2 hours per station per week (final entry in Column 6, Table 4). The EFL study previously referred to indicated that the average student hours per station per week for 53 colleges was 9.5 hours.

The significance of the data regarding the average number of hours use per station per week (10.2) is that the general classroom facilities are being used at only one-half of their potential use by the Russell-Doi Standards (20.3). However, as mentioned earlier in the study, this fails to take into account the fact that some sub-standard facilities are being used. In a later part of the study, utilization data will be presented as though all of the use had been scheduled into the more desirable facilities.

Utilization in General Classrooms
by Day of the Week and Hour of the Day

This section of the report is concerned with a more detailed analysis of the space utilization data which were presented in previous sections of the study.

Utilization computed by the hour of the day, and by the day of the week, gives more precise information about the variations in the rate of scheduled use of the instructional facilities. The significance of this information is that it determines exactly how many rooms and stations are being used at any given hour of a

$$\frac{140 \times 72.5 \times 70}{100} = 20.3 \text{ hours per station per week.}$$

a given day of the week. Peak load hours are readily indicated, as well as the times which can be scheduled for more use as the enrollment increases.

Table 5 indicates the heaviest use in general classrooms occurred on Wednesday (Column 1) when 251 room-periods of use were scheduled. Also, the largest number of student stations were occupied the same day (7,235 - Column 3).

TABLE 5

SUMMARY OF UTILIZATION DATA, BY DAY OF THE WEEK,
IN GENERAL CLASSROOMS, AT EWSC, FALL QUARTER 1962

Day of Week	Room-Period Use (40-Hour Week)		Student-Station-Period Use (40-Hour Week)	
	Total Room- Periods Used	Average Room- Period Use for Day	Total Student- Station- Periods Occupied	Average Student Hours per Station
	(1)	(2)*	(3)	(4)**
Monday	243	4.4	7,083	2.5
Tuesday	163	3.0	4,740	1.7
Wednesday	251	4.6	7,235	2.5
Thursday	153	2.8	4,031	1.4
Friday	205	3.7	5,987	2.1

* Total room-periods used divided by total number of rooms (55).

** Total student-station-periods occupied divided by total number of student-stations (2,864).

Table 6 indicates the best hour of the day for room scheduling was the 8:40 hour, with 191 room-periods of use per week. Student-station occupancy was also highest at the same hour, with 6,154 stations in use weekly. Table 6 further indicates, Columns 2 and 5, the percent of the weekly utilization occurring at any one hour, and in Columns 3 and 6, the cumulative percent of weekly utilization which has occurred up to a given hour of the day. For instance, through the 10:40 class hour, 67.7 percent (Column 6) of the student-station utilization for the average week had already occurred.

TABLE 6

SUMMARY OF UTILIZATION DATA, BY HOUR OF DAY, PER WEEK,
IN GENERAL CLASSROOMS, AT EWSC, FALL QUARTER 1962

Hour of the Day	Room-Period Use			Stu.-Sta.-Pd. Occupancy		
	Total No. at each hour (1)	% of Total		Total No. at each hour (4)	% of Total	
		At each hour (2)	Cumula- tive (3)		At each hour (5)	Cumula- tive (6)
7:40	101	10.2	10.0	3,412	11.7	11.7
8:40	191	18.8	28.8	6,154	21.2	32.9
9:40	151	14.9	43.7	4,406	15.2	48.1
10:40	166	16.4	60.1	5,696	19.6	67.7
11:40	126	12.4	72.5	2,731	9.4	77.1
12:40	95	9.4	81.9	2,444	8.4	85.5
1:40	133	13.1	95.0	3,249	11.2	96.7
2:40	52	5.0	100.0	984	3.3	100.0
TOTAL	1,015	100.0		29,076	100.0	

Table 7 provides a more detailed analysis of the data summarized in Tables 5 and 6. Utilization data for each hour of each day is reported for general classrooms. Since general classrooms may be used interchangeably by all departments, Table 7 provides a measure of the space which is currently unused at Eastern Washington State College. The difference between the reported percent of use for any hour and the standard use, would be the amount of usage still available for future scheduling. For instance, on Monday, at 7:40 A.M., 47.3 percent of the available rooms were scheduled. Standard utilization would call for a room-period use of at least 72.5 percent of a 40-hour week basis. At the same time, student-station use was found to be 28.5 percent, whereas standard utilization would reach the seventy percent figure. Between these two items, considerable more use of general classrooms would be possible.

TABLE 7

PERCENT OF POSSIBLE ROOM-PERIOD USE, AND STUDENT-STATION USE
FOR ALL GENERAL CLASSROOMS, AT EWSC, FALL QUARTER 1962

Hour Of Day	Percent of Possible Use by Hour of Day* and Day of Week										% Use For Hour, Weekly Basis**	
	Monday		Tuesday		Wednesday		Thursday		Friday		Rm-20 (11)	Stu-Sta (12)
	Rm-Pd (1)	Stu-Sta (2)	Rm-Pd (3)	Stu-Sta (4)	Rm-Pd (5)	Stu-Sta (6)	Rm-Pd (7)	Stu-Sta (8)	Rm-Pd (9)	Stu-Sta (10)		
7:40	47.3	28.5	21.8	15.4	50.9	33.1	20.0	14.3	43.6	27.9	36.7	23.8
8:40	80.0	52.3	58.1	37.5	81.8	51.4	58.1	30.1	69.0	43.5	69.4	43.0
9:40	69.1	39.2	38.1	21.0	74.5	40.4	32.7	18.2	60.0	34.9	54.9	30.8
10:40	69.1	45.0	56.3	38.1	67.2	44.5	49.0	31.3	60.0	39.9	60.3	39.8
11:40	54.5	23.0	40.0	16.0	54.5	23.2	40.0	15.1	40.0	18.0	45.8	19.1
12:40	40.0	20.2	32.7	17.1	38.1	19.6	30.9	17.2	30.9	11.2	34.5	17.1
1:40	58.1	29.6	36.3	14.9	63.6	30.6	34.5	12.6	49.0	25.6	48.3	22.7
2:40	23.6	9.4	12.7	5.4	25.4	9.6	12.7	2.0	20.0	7.9	18.9	6.9
Percent Use For Day**	55.2	30.9	37.0	20.6	57.0	31.5	34.8	17.5	46.6	25.1		

*55 Room-Periods Available Each Hour Each Day (55 Rooms)

2,864 Student-Station-Periods Available Each Hour Each Day (2,864 Stu-Stas)

**440 Room-Periods Available Each Day (55 Rooms x 8 Hours)

22,912 Student-Station-Periods Available Each Day (2,864 Stu-Stas x 8 Hours)

***275 Room-Periods Available Each Hour Each Week (55 Rooms x 5 Days)

14,320 Student-Station-Periods Available Each Hour Each Week (2,864 Stu-Stas x 5 Hours)

In referring to Table 7, it can readily be ascertained that the hours of lowest use occurred at 7:40 A.M., 12:40 P.M., and 2:40 P.M. each day of the week. The best hour is found to be at 8:40 A.M., and the poorest hour occurred at 2:40 P.M. (Columns 11 and 12).

Tuesdays and Thursdays were the poorest days of the week for scheduled use, as indicated in the line headed Percent Use For Day. Wednesday was the best day of the week with 57.0 percent room-period use and 31.5 percent student-station use when the room was in use.

Utilization in General Classrooms of Each Size, and
a Study of the Relationship Between the Size of the
Class Section and the Size of the Meeting Room

An inventory of general classrooms, ranked by the number of student stations contained within the room, is the first step in comparing class-section size with room size. A built-in type of inflexibility that contributes heavily to low use is a high proportion of classrooms that are large in size. A room with 40 seats in it used most of the time by classes with half that many students represents a great deal of wasted space. Efficiency requires that spaces be interchangeable in their use and that there be a proper proportion of various room sizes - small rooms for seminars or little groups, larger ones for lecture sections, and some that can be expanded from small to large and then reversed again when the need arises.

Table 8 ranks the 55 general classrooms by the number of rooms falling into categories arranged according to the number of student stations each room contains. Utilization rates for each group of rooms are also presented in this table.

TABLE 8

SUMMARY OF WEEKLY UTILIZATION IN GENERAL CLASSROOMS,
FOR ROOMS OF EACH SIZE, EWSC, FALL QUARTER 1962

Number of Student Stations in Room	Room-Period Use			Student-Station-Period Use			
	Number of Rooms of Each Size (1)	Total Room Periods Used (2)	Average Rm.-Pd. Use for Week (3)	Total Stu.-Sta. in Each Group of Rooms (4)	Total Stu.-Sta.-Periods Occupied (5)	Average Stu. Hrs. per Week per Sta.* (6)	Percent Sta. Use When Room in Use (7)
1-10	1	13	13.0	6	64	10.7	82.3
11-20	0						
21-30	12	179	14.9	340	2,708	8.0	53.7
31-40	16	252	15.8	562	5,869	10.4	65.8
41-50	9	204	22.7	426	5,069	11.9	52.4
51-60	6	139	23.2	334	4,231	12.7	54.7
61-80	7	158	22.6	516	4,987	9.7	42.9
81-100	2	46	23.0	180	2,446	13.6	59.1
101 & over	2	24	12.0	500	3,702	7.4	61.7
Total	55	1,015	18.5	2,864	29,076	10.2	55.1

* Average for 53 Colleges in EFL Study Was 9.5 Student Hours per Week per Station.

Table 8 indicates, for example, that the largest group of rooms (16), and the largest number of student stations (562), are found in the 31-40 student station group. However, Column 3 shows that the 51-60 student station group has the highest average room-period use for the week (23.2), while Column 7 indicates that the 31-40 station group of rooms has the highest average student station use (65.8 percent). The one room in the 1-10 student station group was not included in the computation, because one case does not provide a typical situation from which valid inferences may be drawn. While the middle range of rooms, ranging in size from 21 to 80 student stations, accounts for the bulk of the utilization, this does not accurately indicate the actual size of the various class sections meeting in those rooms. This data is presented in Table 9, page 26.

Table 9 provides a comparison between the size of the room and the size of the class section meeting in the room. Totals for the vertical columns indicate the number of class sections falling in the corresponding size group listed at the top of the column. For instance, there were 171 class sections having ten, or less, students enrolled. The number of sections of a particular size meeting in any of the groups of rooms is indicated in the horizontal rows. Thus, in the vertical column headed 1-10, there were 13 class sections of that size meeting in the 1 to 10 student station room capacity group. In the 11 to 20 room capacity group, there were no class sections of the 1 to 10 size, while in the 21 to 30 room capacity group, there were 57 class sections of the 1 to 10 size.

The heavy black diagonal line on Table 9 provides a visual check on how well the size of the class section fits the size of the room. Numbers appearing more than one space to the right of the heavy black line indicate overcrowding of the room. Numbers appearing more than one space to the left of the black line indicate underuse of the student stations in the room-group. The farther a number appears to the left of the black line, the poorer the utilization of the student stations will be in that room group.

TABLE 9

DISTRIBUTION OF THE NUMBER OF CLASS-PERIOD MEETINGS PER WEEK, IN GENERAL CLASSROOMS, BY SIZE OF CLASS, IN RELATIONSHIP TO CAPACITY OF THE ROOM IN WHICH CLASSES WERE HELD, EWSC, FALL QUARTER 1962

Room Capacity Group	Number of Class-Period Meetings per Week by Size of Each Group (Enrollment)												Total	Percent - Age	Cum. Percent - Age						
	1 to 10		11 to 20		21 to 30		31 to 40		41 to 50		51 to 60					61 to 80		81 to 100		101 & over	
	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 80	81 to 100	101 & over	1 to 10	11 to 20	21 to 30				31 to 40	41 to 50	51 to 60	61 to 80	81 to 100	101 & over
1 to 10	13																				
11 to 20	0	0																			
21 to 30	57	76	40	6																	
31 to 40	38	52	93	54	10	3															
41 to 50	42	31	60	54	14	3															
51 to 60	12	19	20	60	20	8															
61 to 80	4	50	20	38	23	10	13														
81 to 100	5	7	3	0	4	8	6	13													
100 & over							2	0													
Total	171	235	238	212	71	32	21	13										1,015			
Percentage	16.8	23.2	23.4	20.9	7.0	3.2	2.1	1.3													
Cumulative Percentage	16.8	40.0	63.4	84.3	91.3	94.5	96.6	97.9										100.0			

Table 10, page 28, provides a comparison between an "as is" situation, and what it would have been if all class sections had been held in a room which fit the class. Column 2 presents the "as is" situation for the fall quarter, while Column 3 presents the "best fit" situation. Thus, Column 2 indicates there were thirteen class sections meeting in rooms having less than eleven student stations, while Column 3 indicates that there were actually 171 class sections having less than eleven students enrolled in the section. Columns 4 & 5 give the percentage for the numbers listed in Columns 2 & 3. Comparing Column 2 to Column 3, or Column 4 to Column 5, reveals the disproportionate fit of many of the class sections to the rooms in which they were scheduled.

One further comparison can be made which provides an even better illustration of the poor fit, on the average, of the class sections to the rooms. Column 6 reveals that 84.3 percent of all the class sections could have been held in rooms with a student capacity of 40 or under. Eastern Washington State College has 29 rooms falling in this size range, which actually represents 53.0 percent of the total general assignment classroom pool.

Characteristically, institutions tend to overbuild in terms of the relationship between the size of the rooms constructed and the actual pattern of class-section sizes found on the campus. However, as the institutional enrollment increases, a progressive upward shift can be expected in the size of the class sections which go to make up the total pattern. The possibility of any drastic shift in the pattern of class-section size will be dependent upon institutional sectioning policies, the addition of new courses, and finally, upon enrollment increases in the upper divisions of the college. Research in this area indicates that drastic shifts are the exception rather than the rule.

The significance of the information contained in Table 10 is that the size of the rooms available for general assignment at Eastern Washington State College does not follow closely the pattern of room sizes needed to meet the demands generated

by the current academic program. In other words, Column 6 actually represents the percent of rooms of each size needed to house the current academic program in general classrooms at Eastern Washington State College. Since only a limited supply of smaller rooms is available at EWSC, many class sections, of necessity, must be scheduled into the larger rooms.

TABLE 10

A COMPARISON OF WEEKLY SCHEDULED CLASS-SECTIONS MEETING HOURS
WITH A "BEST-FIT" SCHEDULE BASED ON THE NUMBER OF STUDENTS
ENROLLED IN EACH CLASS SECTION, EWSC, FALL QUARTER 1962

Room Capacity Group	No. Rms. in each Group	Actual Class-Section Meeting Hours in Rooms of Each Size			"Best-Fit" Class-Booting Hrs. by Number Students Enrolled		
		Number Sections	Percent of Total	Cumulative Percent	Number Sections	Percent of Total	Cumulative Percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-10	1	13	1.3	1.3	171	16.8	16.8
11-20	0	0	0.0	1.3	233	23.2	40.0
21-30	12	179	17.6	18.9	238	23.4	63.4
31-40	16	252	24.8	43.7	212	20.9	84.3
41-50	9	204	20.1	63.8	71	7.0	91.3
51-60	6	139	13.7	77.5	32	3.2	94.5
61-80	7	158	15.6	93.1	21	2.1	96.6
81-100	2	46	4.5	97.6	13	1.3	97.9
101 & over	2	24	2.4	100.0	22	2.1	100.0
Total	55	1,015	100.0		1,015	100.0	

UTILIZATION OF TEACHING LABORATORIES FOR FALL QUARTER 1962

There are two directions in which planners of instructional laboratories may proceed. One is to plan a single-course laboratory for each advanced course taught, and the other is to plan for multicourse use of a laboratory within a department.

In planning teaching laboratories, there are several questions which must be considered. Some of these questions include: (a) the relation of preparation and storage space to the possibility of multicourse use of laboratories; (b) the most efficient system of using and controlling "set-up" time; (c) the real nature of non-scheduled use; and (d) suitable provisions for demonstrations, lectures, "write-up" and group instruction in connection with laboratory periods. If multicourse use of teaching laboratories is desired, the problems stated above can generally be worked out to make such use possible.

Schools constructing single-course laboratories for advanced courses are automatically building in low utilization rates. Laboratories which cannot be interchanged for use by several courses within a department will never achieve "satisfactory" utilization rates, if their use is to be judged in such terms. Academic planners can be just as guilty of utilization facilities as they can be of proliferating courses. It would appear that Eastern Washington State College, with eight biology laboratories and seven chemistry laboratories, has been guilty of following such a course of action. Having chosen this course of action, it must be assumed that the planners are willing to live with low utilization rates. On the other hand, it cannot be denied that certain laboratory facilities must always be provided - no matter whether the enrollment in a course is six or sixty.

Generally acceptable laboratory standards of use have not yet been developed. One major reason for this is that there are no set patterns of use from one campus to another. Each institution, through its policy decisions on academic matters,

determines how it is going to use its laboratories. Thus, laboratory usage at Eastern Washington State College will not be compared to some "standard" as was the case with general classrooms. A valid comparison of the average weekly room-period and student-station use can be made with use at other institutions. Again, the EFL study of state colleges will be referred to for comparative purposes.¹

Utilization in Teaching Laboratories by Building

The length of the schedule day for teaching laboratories consistently involves more hours than does the schedule day for general classrooms. This is necessary because laboratory hours often have to be scheduled around lecture hours. Upon examination of the laboratory schedules at Eastern Washington State College, it was quite evident that, to include the majority of laboratory usage, a ten-hour schedule day would have to be reported. Thus, laboratory usage was computed on the basis of a fifty-hour week.

Table II, page 31, presents utilization data on a weekly basis for teaching laboratories at Eastern Washington State College. It should be mentioned at this point that Field House utilization in Health, Physical Education, and Recreation activities was not included as laboratory utilization. One reason for not including REPR activity use was because of the different types of spaces required for such activities. Another reason has to do with the difficulty of separating credit hour use from non-credit hour use. Satisfactory techniques for measuring gym use have not yet been developed. Room-periods of use, and student-stations occupied, have been tallied by total numbers, only.

Student use of music practice rooms and office-studios has been compiled separately from the music laboratories. Neither an office-studio nor a music practice room can be rightfully called a music laboratory. Again, use of these facilities has been tallied for reporting purposes, only.

¹To Build or Not to Build.

TABLE 11

SUMMARY OF UTILIZATION DATA, BY BUILDING, IN TEACHING LABORATORIES,
AT EWING, FALL QUARTER 1962

Building	Room-Period Use 50-Period Weekly Basis					Student-Station Use 50-Period Weekly Basis			
	(1) Number of Rooms	(2) Number Stu-Sta of Use	(3) Total Rm-Pds of Use	(4) Av. Rm- Pd. Use	(5) % of Possible Rm-Pd Use	(6) Total Stu-Sta-Pds Occupied	(7) % of Total for Col.	(8) Stu. Hrs per Sta.	(9) % of Possible Sta. Use When Room Actually in Use
Science	27	671	457	16.9	33.9	4,574	35.4	6.8	40.2
Shawalter	10	261	186	18.6	37.2	2,659	20.5	10.2	54.8
Ind. Arts	7	162	169	24.1	48.2	2,310	17.8	14.3	59.3
S. Annex	2	57	45	22.5	45.0	941	7.3	16.5	73.3
Music	2	115	60	30.0	60.0	1,367	10.7	12.1	40.3
Engineering	1	40	38	38.0	76.0	482	3.7	12.1	31.8
Stu. Union	2	25	34	27.0	54.0	348	2.7	13.9	51.5
Home Mgt Brute	1	5	45	45.0	90.0	243	1.9	48.6	108.0
TOTAL	52	1,336	1,054			12,944	100.0		
AVERAGE			20.3		40.5			8.9	44.0

Totals of eighty-five room-periods of use and 2,321 student-station-periods of use were tallied for HPER activities in the Field House. In addition to the above regularly scheduled weekly use, the Field House is also used by the athletic teams during inclement weather, as well as by the ROTC units for drill.

In fourteen music practice rooms and ten office-studios, a total of 1,698 student-station-periods of use per week was tabulated. The above use was for practice and instruction time required of students registered for applied music credit. This amount was in addition to the sixty periods per week of room use and 1,387 student-station-periods per week scheduled for the regular music laboratories.

Table 11 shows fifty-two instructional rooms on campus classified as teaching laboratories. Column 3 indicates there were 1,034 room-periods of use weekly during the Fall Quarter, which gave an average room-period use of 20.3 hours per week. The study of sixty colleges previously reported had an average room-period use of only 10.8 hours per week in teaching laboratories.¹ The Hall of Science accounted for the largest percentage, 35.4 percent, of the total student-station occupancy. Excluding the Home Management House, which is not a typical laboratory, Showalter Annex, with its business program, secured the most efficient use of its student stations during the periods classes were actually meeting (73.3%). However, in comparison to the EFL report on sixty colleges, Eastern Washington State College could show only 44.0% of stations occupied when the rooms were actually in use, while the group of sixty colleges showed 57.0% of stations occupied when the rooms were in use.

The above comparison indicates that while Eastern schedules its laboratories more hours per week (20.3 to 10.8), the other colleges were using their stations more efficiently (44.0 to 57.0 percent of stations occupied). However, it must be remembered that these are averages, and averages tell us little about individual rooms. In order to determine how many additional students might be accommodated

¹To Build or Not to Build.

in the present facilities, it will be necessary to make a detailed study of each teaching laboratory room.

The use of any pre-determined standards for measuring utilization in teaching laboratories was purposefully omitted from this study. Standards are based upon scheduled use of rooms, and in the case of teaching laboratories, the scheduled use of rooms accounts for only a part of the total use of those rooms. Make up time, completing long experiments that run over the allotted time, preparation and dismantling of equipment, individual experimentation on the part of the student, and other legitimate use of the facilities fail to show up in most schedules, and thus reflects only part of the actual laboratory usage. Each teacher was asked to estimate, as accurately as possible, the non-scheduled use of each laboratory under his control. Thus, the summaries presented in Table 11 reflect, more accurately, it is felt, the actual laboratory usage at Eastern Washington State College. Standards, based upon scheduled laboratory use, are not applicable in this situation. The higher average room-period use, and the lower average student-station use, are both directly attributable to the decision to include non-scheduled use in the laboratory study. In the case of teaching laboratories, room-period use is a far more important measure of utilization than is student-station use.

Utilization in Teaching Laboratories by Room

Teaching laboratory use on a room basis makes it possible not only to find high and low levels of use, but to analyze use on a department basis as well. Through such an analysis, it is possible to find out how each department is using the space allocated to it. If a department appears to have control of more space than can be justified by its enrollment, a more equitable distribution of the space assigned is in order.

Table 12, Column 6, indicates that the average student hours per station per week in teaching laboratories, Eastern Washington State College, was 8.9 hours. In the EFL study, the average student hours per station per week was lower at 6.7

TABLE 12

SUMMARY OF UTILIZATION DATA IN TEACHING LABORATORIES,
EMSC, FALL QUARTER 1962

Building	Room Number (1)	Number of Student Stations (2)	Rm.-Ed. Use, Weekly Basis		Student-Station Use, Weekly Basis		
			Total Room Periods of Use (3)	% of Possible Room-Period Use (4)	Total Student-Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use (7)
Hargreaves Home Manag. House	Bas	40	38	76.0	482	12.1	31.8
		5	45	90.0	243	48.6	108.0
	100	20	25	50.0	288	14.4	57.6
	101	30	20	40.0	326	10.9	54.5
	102	40	16	32.0	190	4.8	30.0
Ind. Arts	104	20	20	40.0	316	15.8	79.0
	201	21	46	92.0	702	33.4	72.6
	202	16	18	36.0	204	12.8	71.1
	203	15	24	48.0	282	18.8	78.3
	101	100	33	66.0	1,228	12.3	37.3
Vocal Arts	1	15	27	54.0	159	10.6	39.3
Science	101	19	20	40.0	40	2.1	10.5
	106	24	38	76.0	353	14.7	38.7
	108	20	34	68.0	305	15.3	45.0
	111	24	31	62.0	184	7.7	24.8
	148	32	0	0.0	0	0.0	0.0
	153	24	11	22.0	89	3.7	33.6
	173	40	14	28.0	272	6.8	48.6

TABLE 12

Building	Room Number	Rm. Pd. Use, Weekly		Student-Station Use, Weekly Basis		
		Number of Student Stations	Total Room Periods of Use	Total Student-Station-Periods Occupied	Student Hours per Station	Percent of Station Use When Room is in Use
	(1)	(2)	(3)	(5)	(6)	(7)
Science	174	20	16	148	7.4	46.3
	180	30	6	180	6.0	100.0
	181	24	4	28	1.2	30.0
	183	10	2	8	0.8	40.0
	201	40	17	296	7.4	43.5
	206	40	18	300	7.5	41.7
	208	12	13	47	3.9	30.0
	209	40	12	170	4.3	35.8
	210	10	17	41	4.1	24.1
	211	20	48	267	13.4	27.9
	217	20	11	206	8.2	74.5
	220	16	29	87	5.4	18.6
	248	30	10	218	7.3	73.0
	249	24	16	246	10.3	64.4
	251	30	26	400	13.3	51.2
	254	24	9	108	4.5	50.0
	275	26	11	114	4.4	40.0
	277	24	28	232	9.7	34.6
	289	24	13	206	8.6	66.2
	290	24	3	29	1.2	40.0
Shower	Stage	20	23	318	15.9	69.1
	107	20	12	207	10.4	86.7
	110	16	13	161	10.1	77.7
	302	30	30	232	7.7	25.7

TABLE 12

Building	Room Number (1)	Number of Student Stations (2)	Rm.-Pd. Use, Weekly Basis		Student-Station Use, Weekly Basis		
			Total Room Periods of Use (3)	% of Possible Room-Period Use (4)	Total Student-Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use (7)
Shewalter	303	25	6	12.0	90	3.6	60.0
	304	25	26	52.0	437	17.5	67.3
	305	25	17	34.0	267	10.7	62.9
	312	30	28	56.0	337	11.2	40.0
	317	30	15	30.0	353	11.8	78.7
	319	40	16	32.0	257	6.4	40.0
Shewalter Annex	18	25	30	60.0	625	25.0	83.3
	20	32	15	30.0	316	9.9	66.0
Student Union	KEMC	10	29	58.0	99	9.9	34.1
	304	15	25	50.0	249	16.6	66.4
TOTAL	* 52	1,336	1,054		12,944		
AVERAGE			20.3	40.5		8.9	44.0

*Total number of rooms involved

hours. Even though an acceptable standard measure of use has not been developed for teaching laboratories, it should be obvious that both of the figures quoted above are very low. Table 17, page 44, indicates that the use in teaching laboratories ranged from a low of 3.9 hours per station per week for Physics, to a high of 16.5 hours per station per week for Business. Science, as a division, ranked lowest with an average use of 6.8 hours per station per week, and following in order came Creative Arts--11.1 hours, Language--11.2 hours, Applied Arts--14.4 hours, and Business--16.5 hours.

On the basis of a 50-hour instructional week for laboratory scheduling, it would appear that all laboratories are considerably under-scheduled at Eastern Washington State College. Even though standards are not quoted for laboratory usage, any laboratory which is scheduled much below twenty hours per week would have to be considered as having low room-period use. Also, until approximately 70 percent of the student stations are occupied during the time the laboratory is actually scheduled, student-station use must be considered to be low. Room-period use for individual teaching laboratories is indicated in Column 3, Table 12, and student-station use during the hours the room is actually scheduled is given in Column 7 of the same table.

Utilization in Teaching Laboratories by Day of the Week and by Hour of the Day

Utilization computed by day of the week, and by the hour of the day, gives more precise information about the way in which teaching laboratories are scheduled. Laboratory sections requiring large blocks of time are more difficult to schedule than general classroom sections requiring only one class period per meeting. For instance, three hour labs are common in upper division chemistry courses. It would be quite difficult to schedule more than two such sections daily in any one laboratory. For this reason, high use rates in such rooms are difficult to obtain.

Room-period utilization in teaching laboratories was found to be fairly uniform by the day of the week (Table 13), with the exception of lighter use on Friday. Table 14 indicates a fairly uniform rate of utilization by hour of the day, with the lighter hours found at 7:40 A.M., 11:40 A.M., and after 3:40 P.M. It must be remembered that non-scheduled use in teaching laboratories was included each hour it occurred, and this had the effect of providing some evenness to the daily use rate.

These data are not meant to infer that utilization in teaching laboratories is uniformly distributed throughout all departments. A report will be made of laboratory utilization within each department.

TABLE 13

SUMMARY OF UTILIZATION DATA, BY DAY OF THE WEEK, IN
TEACHING LABORATORIES, AT EWDC, FALL QUARTER 1962

Day of Week	Room-Period Use (30-Hour Week)		Student-Station-Period Use (30-Hour Week)	
	Total Room Periods Used	Average Room- Period Use for Day	Total Student- Station- Periods Occupied	Average Student Hours per Station
	(1)	(2)*	(3)	(4)**
Monday	222	4.3	2,879	2.2
Tuesday	219	4.2	2,654	2.0
Wednesday	218	4.2	2,747	2.0
Thursday	216	4.2	2,408	1.8
Friday	179	3.4	2,256	1.7

* Total room-periods used divided by total number of rooms (52)

** Total student-station-periods occupied divided by total number of student-stations (1,336)

TABLE 14

SUMMARY OF UTILIZATION DATA, BY HOUR OF DAY,
IN TEACHING LABORATORIES, AT EWSC, FALL QUARTER 1962

Hours of the Day	Room-Period Use			Stu.-Sta.-Pd. Occupancy		
	Total No. at Each Hour	% of Total		Total No. at Each Hour	% of Total	
		At Each Hour	Cumula- tive		At Each Hour	Cumula- tive
	(1)	(2)	(3)	(4)	(5)	(6)
7:40	39	5.6	5.6	849	6.6	6.6
8:40	108	10.2	15.8	1,527	11.8	18.4
9:40	134	12.7	28.5	1,692	13.1	31.5
10:40	136	12.9	41.4	2,190	16.9	48.4
11:40	99	9.4	50.8	1,409	10.9	59.3
12:40	113	10.7	61.5	1,186	9.2	68.5
1:40	133	12.7	74.2	1,453	11.2	79.7
2:40	131	12.4	86.6	1,288	10.0	89.7
3:40	88	8.3	94.9	904	6.9	96.9
4:40	53	5.1	100.0	446	3.4	100.0
TOTAL	1,054	100.0		12,944	100.0	

Utilization in Teaching Laboratories of Each Size, and a
Study of the Relationship Between the Size of the Class
Section and the Size of the Meeting Room

Unlike general assignment classrooms, laboratories are usually single-purpose rooms equipped with special types of equipment designed for instruction in a single course. Thus, satisfactory utilization rates cannot be achieved through the simple expedient of assigning additional class sections to the room. Satisfactory utilization in such rooms is achieved only as the enrollment in the course grows large enough to fill the room the desired number of times during each instructional week. Also, as mentioned earlier in this report, it is desirable that certain hours of each day be left open for necessary non-scheduled use of the laboratories by the students. This will include time needed for makeup, to complete experiments which

run over the scheduled time, and to provide opportunity for the students to do individual study and experimentation on their own initiative. Inclusion in the study of regular non-scheduled use of teaching laboratories has the effect of increasing the room-period use per week; but, at the same time, it produces the opposite effect of decreasing the percent of student-station use when the room is in use. However, if a true picture of laboratory use is to be presented, such nonscheduled use must be included in the weekly tally. Laboratory utilization data, for Eastern Washington State College, includes reliable estimates, compiled by the instructor concerned, for all such regular nonscheduled use of the various teaching laboratories found on campus.

The majority of teaching laboratories, at Eastern Washington State College, were designed for 30 students, or less, per section. Table 15 indicates that 47 out of the 52 teaching laboratories contain 30, or less, student stations. Laboratories containing from 21 to 30 student stations had the highest room-period use per week (Column 3), the highest student-station use per week (Column 5), and the highest percent of station use when the room was in use (Column 7). The highest average room-period use per week occurred in the one large room, the Music Rehearsal Hall, with 33 out of a possible 50 periods per week scheduled.

Table 16, page 41, provides a comparison between the size of the room and the size of the class sections meeting in that room. Totals for the vertical columns represent the number of class sections of each size, while the horizontal rows in each vertical column indicate in what size rooms these class sections were actually meeting. Thus, the total at the bottom of the first column indicates there were 499 class sections having ten, or less, students enrolled in each section. The first horizontal row, in the 1-10 class section column, indicates that 89 of the 499 class sections actually met in a room of the same size category (1-10). In the second row, there were 197 class sections of the 1-10 size meeting in rooms which would hold from 11 to 20 students, if filled. Again, figures appearing not more

SUMMARY OF UTILIZATION OF TEACHING LABORATORY
IN ROOMS OF EACH SIZE, ENAC, FALL QUARTER 1962

Number of Student Stations in Room	Number of Rooms of Each Size (1)	Total Sta.-Sts. in Each Group of Rooms (2)	Term-Period Use 10-Week Week		Student-Station-Period Use 10-Week Week		Percent of Sta. Use when Room is in Use (7)
			Total Room Periods Used (3)	Average Sta.-Sts. Use per Week (4)	Total Sta.-Sts. Periods Used (5)	Average Sta. Use per Week per Sta. (6)	
1-10	4	35	93	23.3	233	11.2	60.1
11-20	16	284	350	22.6	3,286	11.6	33.0
21-30	23	373	624	19.3	3,750	10.0	33.0
31-40	9	344	144	16.2	2,103	6.6	60.3
41-50	0	0	0	0.0	0	0.0	0.0
51-60	0	0	0	0.0	0	0.0	0.0
61-80	0	0	0	0.0	0	0.0	0.0
81-100	1	100	23	23.0	1,220	12.2	29.3
101 & over	0	0	0	0.0	0	0.0	0.0
TOTAL	32	1,336	1,026	23.3	12,964	9.8	60.3

than one space to the right, or , of the heavy diagonal line indicates a good fit of the class sections to the room. Figures appearing more than one space to the left of the diagonal line represent underuse of the stations in the room.

The significance of the data contained in Tables 13 and 14 is that, generally speaking, the teaching laboratories at Eastern Washington State College are receiving quite low utilization. Column 4, Table 13, points this fact up quite emphatically. The average student hours per week per station in all teaching laboratories was 8.9 hours out of a possible 10 hour week. If the unscheduled use had not been included in the computation, the figure would have been even lower. However, as mentioned earlier, the only therapy for low utilization in teaching laboratories, of the single purpose type, is to wait for increased enrollment in the courses concerned.

Utilization in Teaching Laboratories by Division and
Department to Which Rooms Are Permanently Assigned

Since teaching laboratories represent controlled space, it is desirable to make an analysis of utilization by division and department to which the rooms are permanently assigned. Tables 17 and 18 present such an analysis for the 32 teaching laboratories at Eastern Washington State College.

The Science Division, with its 27 laboratories, had the lowest utilization rates for room-period use with an average weekly room-period use of 14.9 periods per week per room. In student-station use, the Science Division just barely avoided last place with 60.2 percent of the stations occupied to 60.0 percent in the Language Laboratory. The two Natural Science laboratories were used on average of only nine periods each per week. However, it should be stated that these laboratories had no unscheduled use as did the remainder of the science laboratories. All of the scheduled use in the two Geography laboratories actually occurred in one of the rooms; the other Geography laboratory was used for unscheduled use, only. If unscheduled use had not been compiled for the science laboratories, utilization rates would have appeared to be substantially lower than shown in Table 17. As

ANALYSIS OF ROOM-FULL AND PARTIAL-ROOM OCCUPANCY. BY UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF. (UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF.)

Div. & Dept. to Which Rooms are Permanently Assigned	Room-Full Use				Partial-Occupancy Use	
	Number of Rooms	Average No. of Persons per Room	Number of Students	Average No. of Students per Week per Student	Number of Students per Week per Student	Percentage of Students per Week per Student
<u>Applied Arts</u> Home Economics Industrial Arts	$\frac{10}{3}$ 7	$\frac{23.9}{23.3}$ 26.1	$\frac{207}{61}$ 162	$\frac{14.4}{14.9}$ 16.3	$\frac{14.4}{14.9}$ 16.3	$\frac{60.7}{67.9}$ 89.3
<u>Creative Arts</u> Art Drama Music Radio-TV, Journalism	$\frac{12}{7}$ 1 2 2	$\frac{23.8}{21.1}$ 23.0 30.0 27.0	$\frac{273}{213}$ 20 113 23	$\frac{11.1}{9.9}$ 13.9 12.1 13.9	$\frac{11.1}{9.9}$ 13.9 12.1 13.9	$\frac{46.6}{64.9}$ 69.1 62.3 51.3
<u>Hist. & Soc. Studies</u> Business	$\frac{2}{2}$	$\frac{22.3}{22.3}$	$\frac{17}{17}$	$\frac{16.3}{16.3}$	$\frac{16.3}{16.3}$	$\frac{73.3}{73.3}$
<u>Language & Literature</u> Language	$\frac{1}{1}$	$\frac{28.0}{28.0}$	$\frac{30}{30}$	$\frac{11.7}{11.7}$	$\frac{11.7}{11.7}$	$\frac{60.0}{61.0}$
<u>Science</u> Biology Chemistry Geography Geology Natural Science Physics	$\frac{27}{8}$ 7 2 2 2 6	$\frac{16.9}{16.3}$ 19.6 27.0 26.3 9.0 10.7	$\frac{671}{206}$ 182 29 60 64 123	$\frac{9.0}{7.3}$ 7.3 8.0 11.3 6.7 3.9	$\frac{9.0}{7.3}$ 7.3 8.0 11.3 6.7 3.9	$\frac{60.2}{51.7}$ 57.6 52.0 52.6 52.3 36.6
<u>Total</u>	52	20.3	1,336	9.9	9.9	64.0

TABLE 18

SUMMARY OF SQUARE FEET OF ASSIGNABLE FLOOR SPACE PER 100
HOURS OF STUDENT OCCUPANCY, EWING, FALL QUARTER 1962

Kind of Instructional Room	Number of Rooms	Assignable Sq. Ft. of Floor Space	Hours of Student Occupancy	Sq. Ft. of Floor Space Per 100 Hrs. of Stud. Occup.
	(1)	(2)	(3)	(4)
General Classrooms	38	64,681	29,076	134
Teaching Labs	12	12,686	12,966	607
<u>Applied Arts</u>	<u>10</u>	<u>10,798</u>	<u>2,921</u>	<u>313</u>
Home Economics	3	2,602	811	427
Industrial Arts	7	7,497	2,310	313
<u>Creative Arts</u>	<u>12</u>	<u>12,920</u>	<u>6,171</u>	<u>310</u>
Art	7	7,361	2,118	347
Drama	1	1,612	318	307
Dance, Radio-TV	2	1,618	368	443
Music	2	2,349	1,387	169
<u>Bus. & Soc. Studies</u>	<u>2</u>	<u>1,527</u>	<u>961</u>	<u>162</u>
Business	2	1,527	961	162
<u>Lang. & Lit.</u>	<u>1</u>	<u>1,060</u>	<u>337</u>	<u>309</u>
Language	1	1,060	337	309
<u>Sciences</u>	<u>27</u>	<u>26,900</u>	<u>6,576</u>	<u>386</u>
Biology	8	8,361	1,333	350
Chemistry	7	6,280	1,327	473
Geography	2	2,216	363	642
Geology	2	1,998	337	372
Natural Science	2	2,408	300	803
Physics	6	3,639	312	1,046

would be expected, considerably more unscheduled use was reported for science laboratories than for any other division.

Where rooms are permanently assigned to a department or division, the average number of student hours per week per station will often be quite low. This is well illustrated in Column 4, particularly in the Science Division where the use ranges from a low of 3.9 to a high of 11.2 student hours per station per week (each station is available for 50 hours per week). As another illustration, Cartography, with only one class scheduled for the quarter, controls two rooms,

The release of one of these rooms for some other use might well be indicated, at least until the time the Cartography program can no longer be accommodated in one laboratory room.

As mentioned in previous reports, difficulty has been encountered in attempts to develop suitable laboratory utilization standards. No attempt has been made in this study to apply any "so-called" standards; rather, it has seemed more appropriate to make comparisons with what was found to be the case on other college campuses. The EFL study of 60 colleges¹ reported average student hours of use per station per week of 6.7 hours, as compared to 8.9 hours per station at Eastern Washington State College. Thus, even though laboratory use appeared to be low at Eastern, it was considerably above the average reported for the 60 colleges.

Table 18 presents a summary of square feet of assignable floor space per 100 hours of student occupancy. This is a measure of the density of student population to be found in any specific area or department. The larger the number of square feet of floor space per 100 hours of student occupancy, the poorer the utilization of the assigned space. This measure of use was obtained by dividing the assigned square feet of floor space by the total weekly hours of student use in that space.

Table 18 discloses that in the general classroom category of rooms, 136 square feet of space was required for each 100 hours of student occupancy during the week. The Science Division required 388 square feet of space per each 100 hours of student occupancy, as compared to 162 square feet for Business. Physics, in the Science Division, required 1,066 square feet of space for each 100 hours of student occupancy. Again, the above is a measure of density of use, and as the enrollment in the department goes up, the figure in Column 4 will become smaller. The EFL study did not provide a comparable measure of use, but a previous study conducted by the writer at Colorado State College² does provide a comparable measure.

¹To Build or Not to Build. p.32

²Wayne W. Loomis, A Re-evaluation of Space Utilization at Colorado State College, and a Projection of Building Needs for the Period 1962-1971, Colorado State College, Greeley, 1962, p. 70

In the study at Colorado State College, general classrooms required 136 square feet of floor space per each 100 hours of student occupancy as compared to 134 square feet at Eastern Washington State College. Science laboratories at Colorado State College required only 176 square feet of space as compared to 308 square feet at Eastern. However, the science facilities at Colorado State College were admittedly in very cramped quarters, and the college is presently constructing a new science building. Business laboratories at Colorado State College required 250 square feet per 100 hours as compared to 142 square feet per 100 hours at Eastern. All teaching laboratories at Colorado State College required an average of 223 square feet per 100 hours of student occupancy, as compared to 427 square feet per 100 hours of student occupancy for all teaching laboratories at Eastern.

IMPROVEMENT OF UTILIZATION

The improvement of utilization is not an end in itself. It is simply a means of achieving more efficient use of the educational plant so that money can be saved. In times when money is not available for new buildings, it can be the means for accommodating more students through improved room scheduling and higher student-station use.

Considered from almost any point of view, utilization of classroom and laboratory space at Eastern Washington State College is quite low. Classrooms were used an average of 18.3 periods per week during the 1942 fall quarter. This is about 46 percent of the possible 40 hours per week that they are available for scheduling. Teaching laboratories averaged 28.3 room-periods of use per a 30-hour schedule week, or about 41 percent of the available time.

In general classrooms, the average number of student hours per station per week was 9.3 hours out of a theoretical maximum use of 40 hours per station. In teaching laboratories, the average number of student hours per station per week was only 8.9 hours of a theoretical maximum use of 30 hours.

However, it will be recalled that standard room-period use in general classrooms would be reached at 19 hours use per week, while the standard for average student-station use in general classrooms would be achieved at approximately 10 hours per station per week. In the final analysis, the critical measure of use is the number of hours per week that the average student station is occupied. This measure combines the room-period use with the percent of occupied stations during the periods the room is actually in use.

There are a number of factors which contribute to low utilization. Some of the more important ones will be considered in the following sections.

Uneven Distribution of Classes by Hour of Day and Day of Week

One of the major causes of low utilization on this campus, and an area where change is obviously necessary, is the uneven distribution of class time. The data in Table 7 reveal that peak loads of room and student-station use occur on Wednesday, Monday, Friday, Tuesday and Thursday, and in that order by day of the week. The poorest day is Thursday with less than 25 percent of the available room-periods used, while the best day is Wednesday with 37 percent of the room-periods used.

The poorest hour of the day for scheduling in general classrooms is at 2:40 P.M., while the best hour is at 8:40 A.M. Other low hours occurred at 11:40 A.M. and 12:40 P.M.

In teaching laboratories, Friday received by far the lowest daily use (Table 13). Four hours of the day occurred at 7:40 A.M., 11:40 A.M., 3:40 P.M., and 6:40 P.M.

Length of the Schedule Week

The 40-hour schedule week on college campuses can almost be described as traditional. Students have indicated strong preferences for certain class hours, and even for certain days of the week. Commuting students and working students have exerted strong pressures on schedule makers to pattern a time schedule to their convenience. That the schedule week will of necessity become longer, 50 hours or more, should be obvious to everyone. As the press of students becomes greater, the convenience in scheduling enjoyed by students and teachers alike will gradually be forced from consideration. A ten to twelve hour day, plus Saturday scheduling, is entirely possible within the next few years.

Length of the School Year

The four-quarter, or the three-semester, school year is moving rapidly onto the college scene. The old custom of holding school in session for only nine or ten months of the year is another leisurely pattern which American colleges can no longer afford. Students must be encouraged to think in terms of attending college the year around.

Delayed admission practices for new freshmen, such as those in effect at Eastern Washington State College, show considerable promise for equalizing enrollments throughout the year. This policy resulted in the winter quarter enrollment equalling 104 percent of the fall quarter enrollment for the 1962-63 school year at Eastern. Delayed admission practices can help offset enrollment drops which often occur at the end of a session.

Attempts should be made to develop the summer quarter on a par with the other regular sessions. Recent high school graduates should realize that the four-quarter program makes it possible for them to pursue an accelerated college program in terms of the time required to earn a degree.

Division of Curriculum Units

Another factor, also traditional, which interferes with more efficient scheduling and utilization is the way in which the curriculum is divided into varying units of credit. That is, the tendency to schedule all of the three-credit courses on Monday-Wednesday-Fridays, or the problem which is created with the introduction of a four-credit course.

During the 1962 fall quarter at Eastern Washington State College, almost one-third (32.0 percent) of the total courses offered carried no more than two hours of credit per course. Seventeen percent of the courses offered were of the four-hour variety--a situation which makes it virtually impossible to schedule the fifth day of the week at that hour. Only nineteen percent of the courses were of the five-hour type, while the three-hour courses constituted approximately 32 percent of the numerical offerings.

When the number of two-hour courses approximates the number of three-hour courses, no serious scheduling problems occur. However, during the 1962 fall quarter at Eastern Washington State College, there were twice as many three-hour courses as there were two-hour courses. When this situation exists, there is no possibility of dovetailing the majority of the two and three hour courses into the same hour.

Wherever possible course work should be integrated into larger units of credit. With one-third of the course offerings carrying no more than two hours of credit, a great amount of fractionalization of the curriculum is indicated. Course costs are high, staffing problems become more acute, and scheduling problems are increased under such conditions.

More and more colleges are recognizing that knowledge does not come in neat little packages marked one, two, or three credits. Some recent trends have indicated just the opposite--that students learn more, and faster, when they are permitted to enroll for fewer courses covering broader areas of knowledge.

Class Occupancy Equivalent to Credits Earned

Another entrenched pattern in the academic world is that class hours must equal credit hours. In fact, in many colleges, the class hours of attendance per week for some students is even higher than the number of credit hours for which they are enrolled. This situation exists at Eastern Washington State College where each full-time equivalent student averages 12.4 hours attendance weekly in general classrooms, and 5.5 hours attendance weekly in teaching laboratories. The FTE enrollment is computed on the basis of 15 credit hours for undergraduates, and 12 credit hours for graduate students. The 17.9 hours of class-attendance time for each FTE student thus exceeds even the 15 credit hours on which the FTE enrollment for undergraduates is computed.

It must be recognized, of course, that there is no "average" student in terms of laboratory use. An average laboratory load for chemistry students, for instance,

can not be compared to an average laboratory load for an art student. The average laboratory load for an upper-division, or graduate, student in chemistry is entirely different from the average laboratory load of a lower-division chemistry student. The averages mentioned are simply institutional averages computed on the basis of all students, and they have no particular significance for any one student or any one department.

The critical issue at this point seems to be the number of class hours of occupancy required for each credit hour earned. Must a student sit in class four hours per week to earn four hours of credit? Could he earn four hours of credit by sitting in class three hours, or even two hours, with a heavier out-of-class load?

If ever increasing numbers of students are to be accommodated in our colleges, perhaps we should be exploring the possibilities of cutting down on the sitting time required of a student in organized classes, thereby making available to him more time for independent study. Programmed learning materials, newer types of audio-visual media, and more ample library services could perhaps allow the student to pursue learning on some other basis than required sitting time in a classroom.

Class-Section Size Patterns

The inflexibility of special purpose rooms, teaching laboratories among others, almost guarantees low utilization in such rooms. Because of their unique nature, these rooms cannot be made available for other classes.

A second type of inflexibility that contributes heavily to low use is a poor fit of the class-section size to the room size. When the total institutional pattern of class-section sizes varies significantly from the capacities of the rooms represented in the general assignment classroom pool, it will be impossible to fit all class sections to appropriately sized rooms. Table 10 provides the data needed to make this comparison at Eastern Washington State College. From this data, it

can readily be ascertained that many small classes must be assigned to larger-than-necessary classrooms. This could, quite conceivably, lead to a situation where a room could be scheduled every hour of the day, but still have very low student-station utilization.

When future classrooms are planned, close attention must be given to the prevailing pattern of class-section sizes. By matching the existing room capacities to the current range of class sizes, the needed rooms in the proper size can be planned. The practice of constructing large rooms in anticipation of large class sections at some future date is not sound practice. Studies show that as the size of the institution increases, the average class size decreases. The proportion of large rooms needed actually decreases as the enrollment grows. This is brought about through increased sectioning practices, and the introduction of new courses at the upper levels of the college.

SUMMARY

Quality Analysis and Adequacy of the Present
Facilities for the Instructional Program

The total plant at Eastern Washington State College is more deficient in quality than in academic capacity. Previous utilization reports have indicated that, numerically speaking, the general classroom and teaching laboratories contain sufficient student stations to adequately provide for present enrollments. However, up to this point, no attempt has been made to judge the quality and usability of the instructional facilities currently available to house the academic program.

That the current facilities often structure the content and scope of the academic program is not always recognized by those charged with providing the physical means for meeting the needs of higher education. Limitations on classroom activities and learning experiences are too often imposed by the space in which the class must meet. Thus, deficient physical facilities and equipment tend to define the academic program - rather than the program defining the physical facilities, which is more desirable. Deficient equipment can be replaced, but a room deficient in area, shape, or construction cannot usually be changed without extensive remodeling. Depending upon the type of construction, remodeling may or may not be the answer. Temporary structures, designed as stop gap measures, become increasingly more expensive to maintain with the passage of time. Also, they become more and more deficient in terms of their ability to serve the needs of the academic program. Eastern Washington State College, unfortunately, is still required to depend to a considerable extent upon such structures to house various parts of the academic program. That these structures limit rather than complement the program is all too evident.

The academic program at Eastern Washington State College is currently housed in fourteen buildings. Seven of these buildings can be considered to be in average condition, or better, and to serve the academic program in a satisfactory manner. The other seven buildings - Ratcliffe House, Industrial Arts, Field House, Music

Annex, Showalter Annex, Home Management House, and Vocal Annex - must be considered to range from below average to very poor, as far as the general instructional rooms are concerned. Ratcliffe House, Home Management House, and the Vocal Annex are old residences which were acquired along with land purchased by the college. The three houses are scheduled for removal as soon as possible. Music Annex and Showalter Annex are temporary wooden structures erected during World War II. The Industrial Arts building was erected in 1915, and it is due for a complete renovation, or removal, as soon as possible. The Field House, a World War II drill hall, is in serviceable condition, except for the rooms used as general classrooms.

In an earlier part of this study, it was stated that the usability of a building is determined in part by how well it serves the academic program it houses. Therefore, in the remainder of this study, the facilities rated as deficient will be examined in view of their assigned functions.

The three old residences, not designed as instructional facilities in the first place, are not worth redesigning as instructional space under any circumstances. The extended use of any of these buildings will only serve to hold back the logical development of the academic program concerned. This means that the speech program and clinic, part of the vocal music program, and the home management program should be relocated as soon as more desirable facilities can be provided. Unfortunately, these programs are presently located in the only available space.

Music Annex and Showalter Annex are temporary buildings, both being World War II surplus buildings. Showalter Annex houses part of the Business program, as well as providing office space for faculty members in that department. Some Building and Grounds services are also housed in this building. Acoustically, the two buildings are very poor. Sound travels readily from one end of the building to the other, and it is almost impossible to use more than one part of a building at the same time. Both buildings were erected as temporary structures, and they should

have been removed from the campus several years ago. They are very undesirable as instructional spaces, and they pose extreme handicaps to the students and faculty who are required to use them.

The Industrial Arts building was constructed in 1915. It no longer can adequately serve the instructional program, either in terms of the space needed or the functions desired in the program. The rooms are too small for most classes, and the second floor is not strong enough to support heavy machinery. Technological demands of an automated age can not be met in a 1915 vintage building. The replacement of this building has been given a high priority by the administration of the college.

The Field House, in its physical activity areas, serves the Health and Physical Education program in a satisfactory manner at the present time. As it is a converted drill hall, it has a shorter span of potential use than would a more conventional building. The four general classrooms in the Field House are very deficient in quality. The classrooms are long and narrow with creaky wooden floors. Walls and ceilings are of unfinished plaster board, which, of course, leaves much to be desired acoustically. Windows are loose, and they allow cold air and dust to enter the rooms. Roof supports which bisect the room leave some occupants unable to see the instructor. These are probably the most deficient general classrooms to be found on campus. The H. and P.E. program is one of the most rapid growing programs on campus, and it is deserving of better accommodations for meetings of its classes.

Percent of Instructional Program in Sub-Standard Facilities

Slightly under 20 percent of the total student-station utilization in general classrooms was found to have occurred in nine sub-standard rooms. Four of the deficient classrooms were located in the Field House, three in Ratcliffe Hall, and one each in the Music Annex and the Industrial Arts building. The four general classrooms in the Field House accounted for 10 percent of the total student-station use for the college.

In teaching laboratories, 31 percent of the total student-station utilization occurred in facilities which were deficient to a serious extent. Eleven teaching laboratories, classified as sub-standard facilities, were located in the following buildings: Industrial Arts - 7 rooms; Showalter Annex - 2 rooms; Hargreaves Basement - 1 room; and Vocal Annex - 1 room. Students who are asked to attend classes in these facilities have every right to protest, especially if they realize they are being shortchanged in their efforts to secure a higher education.

As course enrollments continue to grow, other areas of the academic program will require more space. The Art program will soon outgrow its spaces in Showalter Hall and Hargreaves Library. Music needs more practice rooms, classrooms, studios, and rehearsal rooms. Drama and Speech need new facilities especially designed to fit the projected academic programs in those areas.

Effect on Utilization Data if the Nine Sub-Standard Classrooms had not Been Scheduled

It was stated in an earlier section of the study that utilization data for general classrooms would also be shown as if the most deficient general classrooms had not been used. The reason for doing this would be to see what effect the dropping of these facilities from the general assignment classroom pool would have upon the overall utilization figures.

The facilities deemed most deficient include the four general classrooms in the Field House, three general classrooms in Ratcliffe Hall, one general classroom in Industrial Arts, and one general classroom in Music Annex for a total of nine rooms. The nine rooms contained a total of 327 student stations.

When the utilization data contained in Table 4 were recomputed on the basis of 46 general classrooms and 2,537 student stations, the utilization figures were altered as shown in Table 19, page 58.

TABLE 19

TOTAL UTILIZATION COMPUTED ON THE BASIS OF THE FORTY-SIX
MOST ADEQUATE GENERAL CLASSROOMS, FALL QUARTER, EWSC, 1962

Measure of Use	Number of Rooms	
	55	46
	(1)	(2)
Number of student stations	2,864	2,537
Total room periods of use weekly	1,015	1,015
Average room periods of use weekly	18.5	22.1
% of possible room periods of use	46.1	55.2
Total weekly student-station periods of use	29,076	29,076
Average student hours per week per station	10.2	11.5

In using the Doi Standards for determining what might constitute acceptable utilization rates, we found that it should be possible to attain an average of 20.3 student hours per station per week. With only 46 general classrooms to schedule, this figure would be increased from 10.2 hours per station to 11.5 hours. The average room periods of use per week would be increased from 18.5 periods to 22.1 periods. Under the Doi Standard, room period use of 29 hours per week should be possible.

Thus, it would appear from the foregoing data that, to drop the nine most deficient classrooms from the general assignment pool would have little effect upon the present utilization figures. Actually, in referring to Table 4, we see that five rooms, in addition to the two under construction, were not scheduled for even one hour of use during the fall quarter of 1962. These seven unscheduled rooms would provide approximately 280 student stations to partially make up for the 327 student stations which would be lost if the nine sub-standard classrooms were no longer to be scheduled. Whether or not the departments using these rooms would prefer to have their classes scheduled in other buildings remains to be seen. In

the case of music, a move would not be feasible if it meant that the music theory classes would be meeting in rooms adjacent to other classes. Industrial Arts needs a classroom adjacent to the shops for brief meetings before moving into the shop areas.

With other facilities available, there would appear to be no important reasons why Speech and HPER classes could not be scheduled in more suitable rooms. Proprietary attitudes often rule against such moves, however.

RECOMMENDATIONS

As was indicated earlier, the improvement of utilization is not an end in itself. Any steps undertaken to improve utilization will be taken in order that more students may be accommodated in the existing facilities.

Several factors affecting utilization were discussed in the previous pages. As these factors are eliminated, or modified, utilization should improve.

The following recommendations for improving utilization are offered at this time:

1. Encourage divisions and departments to utilize all hours of the schedule day, and all days of the week, when preparing course offerings.

Specific suggestions:

- a. Emphasize first hour and last hour scheduling.
 - b. Schedule upper division courses at all hours of the day.
 - c. Offer more three-hour courses on Tuesdays and Thursdays in 90 minute periods.
 - d. Offer some three-hour courses on Tuesdays and Thursdays, but using an alternate hour some other day of the week.
 - e. Drop different days of the week when scheduling four-hour classes.
 - f. Schedule more laboratory periods for Fridays - college wide, Friday is a light day in laboratories.
 - g. In scheduling laboratory time, do not block out hours of the day when students must take other courses.
2. Increase the length of the school day, at least through the 3:40 hour.
 3. Make the summer quarter a true fourth quarter, particularly for lower division students.
 4. Undue proliferation of the curriculum should be discouraged - integration of current offerings into larger units of credit should be encouraged.

5. Explore possibilities for increasing class size - 17 percent of all classes have less than 11 students enrolled - the average class size is 28.6 students per section. More classes of 40 to 80 students are needed to fill up larger rooms. Are sectioning policies being followed really sound?
6. Increase required out-of-class learning for students - cut down on the in-class sitting time. One example - some music classes require as many as four scheduled meetings per week to earn one hour of credit.
7. Provide additional centralized learning centers available to all students - listening rooms for language, music, reading, tapes, etc.; viewing rooms for films, television, art displays, etc.; and additional reading and study areas adjacent to library materials.

It is rather obvious, after examining the first six recommendations above, that what the divisions and departments choose to do really determines the level of utilization possible within their respective areas. It is useless to talk about significant improvements in utilization, unless the powers that control the academic program are willing to re-examine time-worn, and often unsupportable, assumptions and premises regarding the ways people learn. Items 4 and 6, and to a certain extent Item 5, hold the key for determining how future college students can best be educated. Does learning really consist of mastering a large number of little packages of knowledge? Or is true knowledge best attained through studying integrated bodies of knowledge, and where the student is expected to assume greater responsibility for his own education?

Level of Enrollment Possible in Present General Classrooms

It is difficult, if not impossible, to predict with any degree of accuracy the future level of enrollment possible in the present facilities. If future policies regarding sectioning, course integration, and faculty loads could be known in advance, more accurate predictions could be made. The conservative method is to

predict on the basis of the status quo, and to hope that future changes will improve the picture.

Therefore, in predicting the enrollment capacity of the 46 most adequate general classrooms (Table 19, page 52), it will be assumed that present policies will not be significantly altered within the next few years. However, the enrollment capacity of the present plant will be indicated for a 45-hour week, and a 50-hour week, as well as for the present 40-hour week.

Table 19 presents the utilization data as though all use had been scheduled into 46 rooms instead of 55 rooms.

Because of the wide variation which exists between the range in room capacities available and the current pattern of class-section size, it appears that the most reliable measure of use which can be used in predicting the enrollment capacity of the present plant would be the measure "average room-periods use per week". When the average room-period use per week reaches standard use, the capacity of the plant would have been reached.

Thus, the 22.1 average room-periods use per week (Table 19, Column 2) would be 76 percent of standard use for a 40-hour week. If the present schedule week was a 45-hour week, the same 22.1 average room-periods use per week would be 69 percent of standard use. If the present schedule week was a 50-hour week, the 22.1 average room-periods use per week would be but 61 percent of standard use. For the different length schedule weeks, the following enrollment capacities for the present plant would be indicated:

40-hour week - - - - - 3,090 FTE

45-hour week - - - - - 3,410 FTE

50-hour week - - - - - 3,854 FTE

The above predictions are based upon the assumption that the number of room-periods used per week will tend to increase in proportion to the total enrollment. This assumption is supported by data contained in Table 1, page 8, which shows that

the total room periods used per week increased by 33.7 percent during the 1937-1962 period, while the FTE enrollment for the same period increased 35.0 percent.

On the basis of the present program, it would appear that the college will need additional general classrooms by 1965. The enrollment forecast prepared by the Washington State Census Board predicts that Eastern Washington State College will have an enrollment of 3,250 students in 1965.

If the college were to adopt a 45-hour schedule week, the student capacity would be increased to approximately 3,410 students. On the basis of a 30-hour schedule week, 3,854 students could be scheduled into the present facilities. By using a longer schedule week (45 or 30 hours), the date by which new facilities would need to be provided could be pushed further into the future.

Teaching Laboratory Needs by Department

In regard to the adequacy of the space allotted to the various laboratory needs, a varying picture is presented for the different departments.

In the Applied Arts Division, the facilities provided for Home Economics would seem to be adequate to meet projected future needs. This department produced only a total of 429 credit hours during the 1962 fall quarter, and even though this was an increase over the fall quarter of 1961, no additional space needs are anticipated.

Industrial Arts needs are considerable, both in terms of quantity and quality of space. Until the present building is renovated, or the department is relocated in more suitable facilities, the program cannot be developed according to need.

The Creative Arts Division is operating under extreme handicaps in several departments; Art, Music, Radio-TV, and Speech are all occupying cramped quarters. Music facilities are extremely limited, requiring the program to operate in six different buildings on campus. A great need exists for a Creative Arts complex of buildings which would allow each department to develop in its own right according to the needs and interests of the student body.

Education and Psychology are adequately housed in Martin Hall and the Campus School. Some remodeling is needed in Martin Hall to make the facilities more usable for college level students. Also, experimental laboratories and testing rooms are needed for the Psychology department. These could be provided by remodeling other areas of the present building.

Health, Physical Education, Recreation and Athletics are housed in the Field House. The classrooms in the Field House are totally inadequate, and they are among the facilities recommended to be dropped from the room schedule. The activity areas in the Field House are receiving very heavy use, and additional space will be needed prior to 1970. The entire building, a remodeled World War II drill hall, will eventually need to be replaced with a modern building.

Science, in the new Hall of Sciences, is adequately fixed for space through 1970, at least. However, Languages and Literature, which are currently housed in this building, will need to be phased out of the building over the next few years. Laboratory facilities provided for the various science departments should be sufficient through 1970.

In summary, it can be said that the Creative Arts, and Industrial Arts, have great and immediate need for new facilities. Health, Physical Education, Recreation and Athletics, and Psychology, will need expanded facilities in the near future.

Other areas of the campus will need to be developed along with the instructional space. Additional office space will be required to meet the needs of an expanding staff. Library needs are critical, and they must be met, one way or another, very soon. Student housing and student union facilities must keep pace, not to mention expanded service and maintenance facilities. These are problems which must be considered in future studies.

APPENDIX A

PHYSICAL PLANT SPACE INVENTORY
FOR ALL BUILDINGS

Building	Square Feet Outside Measure	Total Square Feet
Bauer Residence	931	931
Boyes Residence	845	845
Buildings & Grounds Garage	2,000	2,000
Cadet Hall	4,816	9,632
Campus School	26,712	30,240
Faculty Housing	7,242	7,242
Field House	72,960	102,134
Football Bleachers	14,483	14,483
Greenhouse (New)	1,468	1,468
Greenhouse (Old)	1,845	2,045
Hall of Sciences	42,241	105,664
Hargreaves Library	12,680	35,878
Heating Plant	6,568	6,568
Home Management	1,330	1,995
Hudson Hall	29,357	58,714
Hudson Warehouse	10,720	10,720
Industrial Arts	10,431	14,564
Infirmery	5,575	5,575
Louise Anderson Hall	24,067	72,200
Married Student Court	15,164	15,164
Martin Hall	27,930	39,160
Monroe Hall	13,806	31,028
Music Annex	3,850	3,850
Music Building	6,707	6,707
President's Residence	1,410	4,230
Ratcliffe	1,952	3,904
ROTC Garage	880	880
Senior Hall	9,301	27,903
Showalter Annex	3,876	3,876
Showalter Hall	30,000	114,267
Student Union	25,097	32,756
Sutton Hall	10,037	29,940
Vocal Music Annex	872	1,744
Warehouse	11,000	11,000
Total	438,153	809,307

APPENDIX B

PHYSICAL PLANT SPACE INVENTORY
BY ASSIGNED FUNCTION

		Total Square Feet
Administration		16,754
Assignable Instructional Space		299,622
General Classrooms (55)	44,681	
Teaching Laboratories (52)	32,686	
Instructional Service Area	110,000	
Faculty Offices	21,909	
Campus School	30,240	
Library	33,106	
Research	7,000	
Building & Grounds, Warehouse		31,213
Student Services		286,528
Housing	248,197	
Infirmary	5,575	
Student Union	32,756	
Other		175,190
(Includes space occupied by hall- ways, stairs, general storage, custodial, mechanical, restrooms, printing shop, etc.)		
Total		809,307

APPENDIX C

INVENTORY OF ASSIGNABLE SPACE
IN EACH INSTRUCTIONAL BUILDING

<u>Building</u>	<u>Square Feet of Space</u>	
<u>CADET HALL</u>		
*Square Feet Outside Measure		<u>9,632</u>
Assignable Academic Area		<u>8,180</u>
General classrooms	2,001	
Offices	1,259	
Instructional service area	1,302	
Firing range	3,618	
Other Area		1,452
<u>FIELD HOUSE</u>		
Square Feet Outside Measure		<u>102,134</u>
Assignable Academic Area		<u>82,617</u>
General classrooms	2,749	
Gyms	58,034	
Instructional service area	20,008	
Offices	1,826	
Other Area		19,517
<u>HARGREAVES LIBRARY</u>		
Square Feet Outside Measure		<u>35,878</u>
Assignable Academic Area		<u>26,702</u>
Art laboratory	2,772	
Reading rooms	7,370	
Stacks	6,018	
Offices	1,188	
Library services	7,284	
Non-library	2,070	
Other Area		9,176
<u>HOME MANAGEMENT HOUSE</u>		
Square Feet Outside Measure		<u>1,995</u>
Assignable Academic Area		<u>1,330</u>
Other Area		665
<u>INDUSTRIAL ARTS</u>		
Square Feet Outside Measure		<u>14,564</u>
Assignable Academic Area		<u>9,066</u>
General classrooms	460	
Teaching laboratories	7,697	
Instructional service area	554	
Offices	355	
Other Area		5,498

Building	Square Feet of Space	
MARTIN HALL		
Square Feet Outside Measure		39,160
Assignable Academic Area		32,696
General classrooms	11,113	
Instructional service area	1,718	
Offices	4,856	
Gym	8,256	
Auditorium	4,001	
I.M.C.	2,752	
Other Area		6,464
MUSIC BUILDING		
Square Feet Outside Measure		6,707
Assignable Academic Area		4,431
General classrooms	262	
Practice rooms	522	
Office-Studios	732	
Offices	187	
Rehearsal room	1,898	
Instructional service area	482	
Music library	348	
Other Area		2,276
MUSIC ANNEX		
Square Feet Outside Measure		3,850
Assignable Academic Area		2,801
General classrooms	1,229	
Practice rooms	365	
Office-Studio	916	
Offices	291	
Other Area		1,049
RATCLIFFE HALL		
Square Feet Outside Space		3,906
Assignable Academic Area		2,178
General classrooms	906	
Offices	323	
Instructional service area	949	
Other Area		1,726
HALL OF SCIENCES		
Square Feet Outside Measure		105,664
Assignable Academic Area		70,249
General classrooms	13,357	
Teaching laboratories	26,975	
Instructional service area	13,107	
Offices	6,018	
Research services	6,632	
Lecture-Auditorium	2,322	
Library	1,485	
Animal quarters	353	
Other Area		35,415

Building	Square Feet of Space	
<u>SHOWALTER HALL</u>		
Square Feet Outside Measure		114,267
Assignable Academic Area		48,930
General classrooms	13,210	
Teaching laboratories	8,219	
Instructional service area	2,893	
Offices	18,343	
Auditorium	6,265	
Other Area		65,337
<u>SHOWALTER ANNEX</u>		
Square Feet Outside Measure		3,876
Assignable Academic Area		2,682
Teaching laboratories	1,527	
Instructional service area	358	
Offices	797	
Other Area		1,194
<u>STUDENT UNION</u>		
Square Feet Outside Measure		32,756
Assignable Academic Area		2,351
Teaching laboratories	1,619	
Instructional service area	732	
Other Area		30,405
<u>VOCAL MUSIC ANNEX</u>		
Square Feet Outside Measure		1,744
Assignable Academic Area		850
Other Area		894

*Includes appurtenances and wall area.

APPENDIX D

SUMMARY OF SPACE AND STATIONS
IN GENERAL CLASSROOMS

Building	Room Number	Total Sq. Ft.	Present No. of Stations	Sq. Ft. per Station	Optimum No. of Stations*
Cadet Hall	201	713	47	15	60
	202	575	30	19	40
	203	713	32	22	60
Field House	201	682	38	18	48
	204	622	42	15	42
	205	724	36	20	42
	206	721	30	24	42
Industrial Arts	200	460	30	15	30
Martin Hall	102	690	48	14	54
	110	1,105	90	12	90
	111	429	25	17	33
	112	649	46	14	48
	120	638	25	26	25
	121	440	30	15	24
	201	610	36	17	52
	202	713	58	12	57
	203	531	34	16	22
	204	504	36	14	38
	205	704	50	14	55
	206	935	80	12	42
	207	472	34	14	33
	208	664	54	12	54
	215	1,353	50	27	70
	R-TV	709	40	27	70
Music	109	262	6	43	8
Music Annex	2(B)	1,229	52	24	76
Ratcliffe	1	299	36	8	24
	2	306	31	10	24
	3	301	32	9	24

Building	Room Number	Total Sq. Ft.	Present No. of Stations	Sq. Ft. per Station	Optimum No. of Stations*
Science	110	837	24	35	24
	113	837	46	18	46
	116	945	40	24	40
	117	1,053	34	31	30
	118	729	35	21	32
	138	1,674	228	7	228
	147	540	32	17	30
	151	1,026	58	18	48
	170	532	27	20	26
	202	1,404	90	16	90
	207	621	40	16	36
	238	594	30	20	32
	239	1,053	80	13	80
	242	1,053	70	15	64
	243	432	30	14	24
	247	945	58	16	48
	295	756	48	16	41
Showalter	105	4,503	272	17	272
	207	956	70	14	80
	209B	376	29	13	28
	217	804	Construction		70
	306	960	74	13	80
	307	960	76	13	80
	308	816	66	12	66
	309	804	Construction		70
	316	816	49	17	70
	318	816	50	17	70
	320	595	30	20	42
Total	55	44,681	2,864	16	3,109

*This represents the number of stations that can be practicably contained in a given space. The optimum number is arrived at by estimating the total number of people that can be comfortably accommodated at a given time by the proper arrangement of equipment with respect to the purpose for which the space is being used.

APPENDIX E

SUMMARY OF SPACE AND STATIONS
IN TEACHING LABORATORIES

Building	Room Number	Total Sq. Ft.	No. of Stations	Sq. Ft. per Station	Department Assigned
Hargreaves	Basement	2,772	50	69	Art
Home Managment	House	800	6	133	Home Economics
Industrial Arts	100	744	20	37	Ind. Arts
	101	1,678	30	56	"
	102	2,661	40	67	"
	104	459	20	23	"
	201	914	21	44	"
	202	703	16	44	"
	203	538	15	36	"
Music	101	1,898	100	19	Music
Music Annex	1	450	15	30	Music
Science	101	1,161	19	61	Geography
	106	1,053	24	44	Geology
	108	1,053	20	53	Geography
	111	945	24	39	Geology
	148	1,269	32	40	Physics
	153	1,269	24	53	Physics
	173	1,204	40	30	Nat. Science
	174	560	20	28	Physics
	180	1,092	30	36	Physics
	181	1,204	24	50	Nat. Science
	183	756	10	76	Physics
	201	1,161	40	29	Chemistry
	206	969	40	24	"
	208	513	12	43	"
	209	1,161	40	29	"
	210	513	10	51	"
	211	910	20	46	"
	217	1,053	20	53	"
	220	513	16	32	Physics
	248	1,161	30	39	Biology
	249	1,053	24	44	"
	251	1,026	30	34	"
	254	729	24	30	"

Building	Room Number	Total Sq. Ft.	No. of Stations	Sq. Ft. per Station	Department Assigned
Science	275	1,184	26	46	Biology
	277	1,092	24	46	"
	289	1,204	24	50	"
	290	1,092	24	46	"
Showalter	Stage	1,612	20	81	Drama
	107	947	20	47	Home Economics
	110	855	16	53	"
	302	725	30	24	Art
	303	695	25	28	"
	304	690	25	28	"
	312	1,040	30	35	Language
	317	804	30	27	Art
	319	960	40	24	"
Showalter Annex	18	787	25	31	Business
	20	740	32	23	"
Student Union	KEMC	1,064	10	106	Radio
	204	555	15	37	Journalism
Total	52	52,686	1,336	39	

PHYSICAL PLANT INVENTORY AND UTILIZATION STUDY,
EASTERN WASHINGTON STATE COLLEGE, 1962-1963

Supplement #1, Winter Quarter 1963

Supplement No. 1, for the Winter Quarter 1963, becomes the second part of a three-part study covering the three regular academic quarters of the 1962-1963 school year. Supplement No. 2, for the Spring Quarter 1963, will be added to complete one full academic year's study of space utilization on the Eastern Washington State College campus.

While it was not anticipated that any one quarter's utilization would differ markedly from another quarter, it was felt that a three-part study would help to point up any change in emphasis which might take place in a program of study from one quarter to another. Beyond this possibility, any other marked change would probably occur as a result of significant enrollment shifts during the year. It is, of course, a goal of all colleges and universities to level out the year's use as much as possible, thus achieving full utilization of their facilities the year around. The completed utilization study, with the addition of data for the Spring Quarter, will indicate how well this has been accomplished at Eastern Washington State College.

In order that some comparisons could be made during the fall quarter utilization study, frequent references were made to a recent study of national scope.¹ However, for the balance of the study, the only comparisons made will be for data which apply specifically to the Eastern Washington State College campus. Through the use of the data obtained in the study, it is hoped that ways and means will be found by which more students can be accommodated in the existing facilities.

Since a rather complete discussion of space utilization was included in the original report, there would, therefore, be no point in repeating the preliminary information in each of the supplements. Each of the supplements is to be con-

¹To Build or Not to Build, Educational Facilities Laboratory, New York, 1961

sidered as an extension of the fall quarter study, and by comparing tables with like tables, one quarter's utilization can quickly be compared to another. The subscript "a" will follow the table numbers for the winter quarter study, while the subscript "b" will be used to indicate the spring quarter study.

A few general comments regarding winter quarter utilization follow.

Table 1a, page 4, reveals that average room-period use in general classrooms declined from 18.5 hours per room per week during the fall quarter to 16.7 hours per room per week during the winter quarter. Total room-periods of use during the same period declined from 1,015 to 968, while the total number of rooms available for general scheduling increased from 55 to 58.

The average number of student hours per station per week declined also -- from 10.2 hours to 9.3 hours.

Teaching laboratories experienced a similar decline in the average number of room-periods used weekly -- from 20.3 hours to 18.8 hours per room per week. However, the average student hours per station per week increased from 8.9 to 9.1 (Table 2a, page 5).

It should be pointed out, of course, that the FTE enrollment declined from 2,304 during the fall quarter to 2,265 during the winter quarter.

The proportion of small classes increased during the winter quarter. For instance, Table 10a, page 15, reveals that 19.9 percent of the total class sections had less than eleven students enrolled as compared to 16.8 percent during the fall quarter (see Table 10, page 28, *Physical Plant Inventory and Utilization Study, Eastern Washington State College, 1962-1963*).

There would be little need for repeating the final three sections of the original report at this time. The suggestions for improving utilization, the general summary comments, and the recommendations for improving utilization still stand. Data reported in the seventeen tables on the following pages merely re-offer what was reported earlier. Utilization can be improved, but to do so will require the complete support and cooperation of the academic planners, as well as

that of the administration. It is assumed, of course, that utilization will need to be improved in view of anticipated enrollment increases during the next few years. In reading the following pages, the page number in parentheses, following the table number, indicates the page of the original report where the companion table may be found.

Several more detailed analyses of room and building use are reported in Tables 3a, 4a, 7a, 11a, and 12a.

Utilization by hour of the day and day of the week is reported in Tables 5a, 6a, 13a, and 14a.

Studies of the relationship of the class section size to the size of the meeting room are presented in Tables 8a, 9a, 10a, 15a, and 16a.

An analysis of room-period and student-station use, by division and department to which the rooms are permanently assigned (Table 17a), completes the utilization study for the winter quarter.

Again, Tables 1a and 2a present a general summary of winter quarter utilization in general classrooms and teaching laboratories. Also, the same two tables provide a ready comparison of winter quarter utilization with that for the fall quarter, previously reported in the Physical Plant Inventory and Utilization Study for 1962-1963.

The balance of Supplement #1 is given over to a compilation of the utilization data as presented in Table 1a through Table 17a.

TABLE 1a (Table 1, page 8*)

A Comparison of Utilization Data in General
Classrooms, at Eastern Washington State College,
For Fall Quarter 1962 and Winter Quarter 1963

General Classrooms	Summary of Utilization Data		
	Fall Quarter 1962 (1)	Winter Quarter 1963 (2)	% Change (3)
1. Number of Rooms	55	58	+ 5.5
2. Number of Student Stations	2,864	2,993	+ 4.5
3. Assignable Square Feet	44,681	44,773	+ .2
4. Total Rm-Pds Used per Week	1,015	968	- 4.6
5. Total Stu-Sta-Hrs Used per Week	29,076	27,927	- 4.0
6. Average Rm-Pds per Room per Week	18.5	16.7	- 9.7
7. Average % Sta. Occupied When in Use	55.1	55.7	+ 1.1
8. Average Stu-Hrs per Sta. per Week	10.2	9.3	- 8.8
9. Sq. Ft. per 100 Stu-Sta-Hrs	154	160	+ 3.9
10. Average Sq. Ft. per Stu-Sta.	15.6	15.0	- 3.8
11. FTE Enrollment**	2,304	2,285	- .8
12. Square Feet per FTE Student	19.0	19.6	+ 3.2
13. Stu-Sta-Hrs Use per FTE Student	12.4	12.2	- 1.6

*Physical Plant Inventory and Utilization Study, Eastern Washington State College, Cheney, Washington, 1962-1963.

**Total credit hours registered for divided by 15.

TABLE 2a (Table 2, page 11)

A Comparison of Utilization Data in Teaching
Laboratories, at Eastern Washington State College,
for Fall Quarter 1962 and Winter Quarter 1963

Scheduled Teaching Laboratories	Summary of Utilization Data		
	Fall Quarter 1962 (1)	Winter Quarter 1963 (2)	% Change (3)
1. Number of Rooms	52	52	0.0
2. Number of Student Stations	1,336	1,377	+ 3.0
3. Assignable Square Feet	52,686	53,343	+ 1.2
4. Total Rm-Pds Used per Week*	1,054	979	- 7.1
5. Total Stu-Sta-Hrs Used per Week*	12,944	12,462	- 3.8
6. Average Rm-Pds per Room per Week	20.3	18.8	- 7.4
7. Average % Stas Occupied When in Use	44.0	48.4	+10.0
8. Average Stu-Hrs per Sta. per Week	8.9	9.1	+ 7.8
9. Sq. Ft. per 100 Stu-Sta-Hrs	407	428	+ 5.2
10. Average Sq. Ft. per Stu-Sta.	39	38.7	- .8
11. FTE Enrollment**	2,304	2,285	- .8
12. Square Feet per FTE Student	22	23.3	+ 5.9
13. Stu-Sta-Hrs Use per FTE Student	5.5	5.5	0.0

*Includes non-scheduled student use as reported by teaching faculty.

**Total credit hours registered for divided by 15.

TABLE 3a (Table 3, page 14)

SUMMARY OF WEEKLY UTILIZATION DATA, BY BUILDING, IN GENERAL CLASSROOMS,
AT EASTERN WASHINGTON STATE COLLEGE, WINTER QUARTER 1963

Building	Rm-Pd. Use, 40-Hour Week			Student-Station Use, 40-Hour Week				
	Number of Rooms (1)	Number Student-Stations (2)	Total Room-Periods of Use (3)	% of Possible Room-Period Use by Standard* (4)	Total Student-Station-Periods Occupied (5)	% of Total Station-Periods for Col. 5 (6)	Student Hours per Station (7)	Percent of Possible Station Use When Room Actually in Use** (8)
Science	17	970	294	43.2	8,496	30.4	8.8	50.9
Martin	15	662	177	29.5	5,744	20.6	8.7	73.7
Showalter	11	856	247	56.1	8,629	30.8	10.1	44.9
F. H.	4	146	59	36.9	1,651	5.9	11.3	76.4
C. H.	3	130	48	40.0	1,414	5.1	10.9	68.1
Ratcliffe	3	99	47	39.2	864	3.1	8.7	55.4
Music	1	8	12	30.0	78	0.3	9.8	81.7
I. A.	1	30	17	42.5	148	0.5	4.9	28.8
Hargreaves	1	25	22	55.0	211	0.8	8.4	38.2
Mus. Anx.	2	67	45	56.3	692	2.5	10.3	45.8
TOTAL	58	2,993	986		27,927	100.0		
AVERAGE			16.7	41.7			9.3	55.7

*Doi Standard: 72.5% (29 hours of a 40-hour schedule week)

**Doi Standard: 70.0% Station occupancy in a scheduled general classroom

TABLE 4a (Table 4, page 16)

SUMMARY OF WEEKLY UTILIZATION DATA IN GENERAL CLASSROOMS,
AT EASTERN WASHINGTON STATE COLLEGE, WINTER QUARTER 1963

Rm.-Pd. Use, 40-Hour Week							Student-Station Use, 40-Hour Week		
Building	Room Number	Number of Student-Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use by Standard* (4)	Total Student-Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use** (7)		
Cadet Hall	201	60	12	30.0	496	8.3	69.2		
	202	30	16	40.0	284	9.5	59.4		
	203	40	20	50.0	634	15.9	79.5		
Field House	201	38	6	15.0	225	5.9	98.3		
	204	42	20	50.0	573	13.6	68.0		
	205	36	20	50.0	634	17.6	88.0		
	206	30	13	32.5	219	7.3	56.2		
Hargreaves	A	25	22	55.0	211	8.4	38.2		
Ind. Arts	200	30	17	42.5	148	4.9	28.8		
	102	48	27	67.5	980	20.4	75.6		
Martin	110	90	17	42.5	1,233	13.7	80.6		
	111	25	13	32.5	212	8.5	65.4		
	112	48	23	57.5	723	15.1	65.7		
	121	24	0	0.0	0	0.0	0.0		
	201	36	11	27.5	169	4.7	42.7		
	202	57	13	32.5	389	6.8	52.3		

TABLE 4a

		Rm.-Pd. Use, 40-Hour Week			Student-Station Use, 40-Hour Week		
Building	Room Number	Number of Student Stations	Total Room Periods of Use	% of Possible Room-Period Use by Standard*	Total Student-Station-Periods Occupied	Student Hours per Station	Percent of Station Use When Room is in Use**
Martin	203	22	20	50.0	285	13.0	65.0
	204	38	0	0.0	0	0.0	0.0
	205	50	9	22.5	381	7.6	84.4
	206	42	15	37.5	615	14.6	97.3
	207	33	5	12.5	40	1.2	24.0
	208	54	8	20.0	397	7.4	92.5
	215	70	1	2.5	68	.9	90.0
	RTV	25	15	37.5	252	10.1	67.3
Music	109	8	12	30.0	78	9.8	81.7
Music Anx.	A	52	32	80.0	562	10.8	33.8
	B	15	13	32.5	130	8.7	66.9
Ratcliffe	1	36	32	80.0	599	16.6	51.9
	2	31	15	37.5	265	8.5	56.7
	3	32	0	0.0	0	0.0	0.0
Science	110	24	9	22.5	189	7.9	87.8
	113	46	18	45.0	467	10.2	56.7
	116	40	19	47.5	518	13.0	68.4
	117	34	9	22.5	147	4.3	47.8
	118	35	18	45.0	363	10.4	57.8

TABLE 4a

		Rm.-Pd. Use, 40-Hour Week			Student-Station Use, 40-Hour Week		
Building	Room Number (1)	Number of Student- Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use by Standard* (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use** (7)
Science	138	228	11	27.5	1,472	6.5	59.1
	147	32	22	55.0	293	9.2	41.8
	151	58	18	45.0	421	7.3	40.6
	170	27	12	30.0	205	7.6	63.3
	202	90	21	52.5	677	7.5	35.7
	207	40	15	37.5	372	9.3	62.0
	238	30	26	65.0	452	15.1	58.1
	239	80	27	67.5	1,145	14.3	53.0
	242	70	19	47.5	691	9.9	52.1
	243	30	15	37.5	252	8.4	56.0
	247	58	20	50.0	534	9.2	46.0
	295	48	15	37.5	298	6.2	41.3
	Showalter	105	272	16	40.0	3,168	11.6
207		70	30	75.0	806	11.5	38.3
209		29	14	35.0	143	4.9	35.0
217		70	26	65.0	799	11.4	43.8
306		74	21	52.5	542	7.3	34.8
307		76	22	55.0	1,154	15.2	69.1
308		66	15	37.5	335	5.1	34.0

TABLE 4a

Building	Rm.-Pd. Use, 40-Hour Week			Student-Station Use, 40-Hour Week			
	Room Number (1)	Number of Student- Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use by Standard* (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use** (7)
Showalter	309	70	22	55.0	542	7.7	35.0
	316	49	29	72.5	326	6.7	23.1
	318	50	27	67.5	443	8.9	33.0
	320	30	35	62.5	371	12.4	49.6
TOTAL	58	2,993	968		27,927		
AVERAGE			16.7	41.7		9.3	55.7

* Doi Standard: 72.5% (29 hours of a 40-hour week)

**Doi Standard: 70.0% of student stations occupied when the room is in use

TABLE 5a (Table 5, page 20)

SUMMARY OF WEEKLY UTILIZATION DATA, BY DAY OF THE WEEK,
IN GENERAL CLASSROOMS, AT EWSC, WINTER QUARTER 1963

Day of Week	Room-Period Use (40-Hour Week)		Student-Station-Period Use (40-Hour Week)	
	Total Room- Periods Used	Average Room- Period Use for Day	Total Student- Station- Periods Occupied	Average Student Hours per Station
	(1)	(2)*	(3)	(4)**
Monday	240	4.1	6,931	2.3
Tuesday	156	2.7	4,701	1.6
Wednesday	236	4.1	6,903	2.3
Thursday	141	2.4	3,782	1.3
Friday	195	3.4	5,610	1.9
TOTAL	968	16.7	27,927	5.3

*Total room-periods used divided by total number of rooms (58)

**Total student-station-periods occupied divided by total number of student stations (2,993)

TABLE 6a (Table 6, page 21)

SUMMARY OF WEEKLY UTILIZATION DATA, BY HOUR OF DAY,
IN GENERAL CLASSROOMS, AT EWSC, WINTER QUARTER 1963

Hour of the Day	Room-Period Use			Stu.-Sta.-Pd. Occupancy		
	Total No. at each hour	% of Total		Total No. at each hour	% of Total	
		At each hour	Cumula- tive		At each hour	Cumula- tive
	(1)	(2)	(3)	(4)	(5)	(6)
7:40	110	11.4	11.4	3,581	12.8	12.8
8:40	181	18.7	30.1	5,352	19.2	32.0
9:40	157	16.2	46.3	4,546	16.2	48.2
10:40	173	17.9	64.2	5,715	20.5	68.7
11:40	110	11.4	75.6	2,570	9.2	77.9
12:40	65	6.7	82.3	2,320	8.3	86.2
1:40	132	13.6	95.9	3,171	11.4	97.6
2:40	40	4.1	100.0	672	2.4	100.0
TOTAL	968	100.0		27,927	100.0	

TABLE 7a (Table 7, page 22)

PERCENT OF POSSIBLE ROOM-PERIOD AND STUDENT-STATION USE, BY HOUR OF DAY AND DAY OF WEEK, FOR ALL GENERAL CLASSROOMS, AT EMSC, WINTER QUARTER 1963

Hour of Day	Percent of Possible Use by Hour of Day* and Day of Week												% Use for Each Weekly Basis**	
	Monday		Tuesday		Wednesday		Thursday		Friday					
	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
7:40	50.0	27.1	24.1	17.9	51.7	33.8	22.4	16.0	41.4	24.9	37.9	23.9		
8:40	74.1	44.4	53.4	30.7	69.0	43.3	50.0	22.3	65.5	38.4	62.4	35.8		
9:40	67.2	37.8	43.1	25.8	69.0	37.9	43.1	23.0	48.3	27.4	54.1	30.4		
10:40	69.0	42.9	53.4	36.5	69.0	43.0	39.7	23.6	67.2	42.8	60.0	38.2		
11:40	46.6	23.6	32.8	12.8	48.3	20.6	27.6	10.5	34.5	18.4	37.9	17.2		
12:40	29.3	20.8	20.7	15.4	27.6	18.5	19.0	16.7	15.5	6.1	22.4	15.5		
1:40	62.1	29.9	27.6	11.5	58.6	28.9	29.9	9.4	53.4	26.2	45.5	21.2		
2:40	15.5	4.9	13.8	4.8	13.8	4.5	15.5	5.1	13.8	3.1	13.8	4.5		
Percent Use for Day**	51.7	28.9	33.6	19.6	50.9	28.8	30.4	15.7	42.0	23.4				

*58 Room-Periods Available Each Hour Each Day (58 Rooms)

2,993 Student-Station-Periods Available Each Hour Each Day (2,993 Stu-Stas)

**464 Room-Periods Available Each Day (58 Rooms x 8 Hours)

23,944 Student-Station-Periods Available Each Day (2,993 Stu-Stas x 8 Hours)

***290 Room-Periods Available Each Hour Each Week (58 Rooms x 5 Days)

14,965 Student-Station-Periods Available Each Hour Each Week (2,993 Stu-Stas x 5 Hours)

TABLE 2a (Table 8, page 24)

SUMMARY OF WEEKLY UTILIZATION IN GENERAL CLASSROOMS,
FOR ROOMS OF EACH SIZE, EWSC, WINTER QUARTER 1963

Number of Student Stations in Room	Number of Rooms of Each Size	Room-Period Use			Student-Station-Period Use			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-10	1	14	14	14.0	8	78	9.8	70.0
11-20	1	13	13	13.0	13	130	8.7	66.9
21-30	14	217	217	15.5	381	3,223	8.5	34.9
31-40	14	190	190	13.6	301	4,239	8.3	62.3
41-50	9	183	183	20.3	423	4,806	11.4	36.1
51-60	6	103	103	17.2	319	2,799	8.3	40.2
61-80	9	183	183	20.3	646	6,042	9.4	46.3
81-100	2	38	38	19.0	180	1,910	10.6	33.7
101 & over	2	27	27	13.5	300	4,640	9.3	60.8
TOTAL	50	948	948	18.7	2,993	27,917	9.3	33.4

TABLE 9a (Table 9, page 26)

DISTRIBUTION OF THE NUMBER OF CLASS-PERIOD MEETINGS PER WEEK IN GENERAL CLASSES, BY SIZE OF CLASS, IN RELATIONSHIP TO CAPACITY OF THE ROOM IN WHICH CLASSES WERE HELD, EWING, WINTER QUARTER 1963

Room Capacity Group	Number of Class-Period Meetings per Week by Size of Each Group (Enrollment)												Total	Average Percentage	Cumulative Percentage										
	1 to 10		11 to 20		21 to 30		31 to 40		41 to 50		51 to 60					61 to 70		71 to 80		81 to 90		91 to 100		over 100	
	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	over 100														
1 to 10	2																						14	1.4	1.4
11 to 20		3																					13	1.3	2.7
21 to 30			106		66	7																	217	22.3	23.2
31 to 40			48	53	53	69																	190	19.6	44.8
41 to 50			33	20	20	56	36																183	18.9	63.7
51 to 60			21	18	18	24	18	2															103	10.6	74.3
61 to 80			42	33	33	42	9	35	10														183	18.9	93.2
81 to 100	3	5	8	0	6	6	0	6	0	12													38	4.0	97.2
101 & over																							27	2.8	100.0
Total	191	265	180	178	69	41	10	12															948		
Percentage Cumulative	19.9	26.9	18.7	18.4	7.2	4.3	1.0	1.2	2.4																
Percentage	19.9	44.8	65.5	83.9	91.1	95.4	96.4	97.6	100.0																

TABLE 10a (Table 10, page 28)

A COMPARISON OF WEEKLY SCHEDULED CLASS-SECTION MEETING HOURS
WITH A "BEST-FIT" SCHEDULE BASED ON THE NUMBER OF STUDENTS
ENROLLED IN EACH CLASS SECTION, EWSC, WINTER QUARTER 1963

Room Capacity Group	No. Rms. in each Group	Actual Class-Section Meeting Hours in Rooms of Each Size			"Best-Fit" Class-Meeting Hrs. by Number Students Enrolled		
		Number Sections	Percent of Total	Cumulative Percent	Number Sections	Percent of Total	Cumulative Percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-10	1	14	1.4	1.4	191	19.9	19.9
11-20	1	13	1.3	2.7	260	26.9	46.8
21-30	14	217	22.5	25.2	180	18.7	65.5
31-40	14	190	19.6	44.8	178	18.4	83.9
41-50	9	183	18.9	63.7	69	7.2	91.1
51-60	6	103	10.6	74.3	41	4.3	95.4
61-80	9	183	18.9	93.2	10	1.0	96.4
81-100	2	38	4.0	97.2	12	1.2	97.7
101 & over	2	27	2.8	100.0	27	2.4	100.0
TOTAL	58	968	100.0		968	100.0	

TABLE 11a (Table 11, page 31)

SUMMARY OF WEEKLY UTILIZATION DATA, BY BUILDING, IN TEACHING LABORATORIES,
AT EWSC, WINTER QUARTER 1963

Building	Room-Period Use 50-Hour Weekly Basis				Student-Station Use 50-Hour Weekly Basis				
	Number of Rooms (1)	Number Stu-Stas (2)	Total Rm-Pds of Use (3)	Av. Rm- Pd. Use (4)	% of Possible Rm-Pd Use (5)	Total Stu-Sta-Pds Occupied (6)	% of Total for Col. 6 (7)	Stu. Hrs per Sta. (8)	% of Possible Sta. Use When Room Actually in Use (9)
Science	29	721	349	12.0	24.1	3,495	28.0	4.8	40.0
Showalter	10	266	195	19.5	39.0	2,753	22.1	10.3	52.8
Ind. Arts	7	165	220	31.4	62.9	2,238	18.0	20.6	43.3
S. Annex	2	65	73	36.5	73.0	1,341	10.8	20.6	56.4
Music	1	100	43	43.0	86.0	1,652*	13.3	16.5	38.4
Hargreaves	1	30	34	34.0	68.0	422	3.4	14.1	41.5
Stu. Union	1	20	50	50.0	100.0	441	3.5	22.1	44.2
Vocal Anx.	1	10	15	15.0	30.0	120	0.9	12.0	80.0
TOTAL	52	1,377	979			12,462	100.0		
AVERAGE				18.8	37.7			9.1	48.4

*Scheduled use only - does not include the 1,652 student hours of use tallied weekly in music studios and practice rooms.

TABLE 12a (Table 12, page 34)

SUMMARY OF WEEKLY UTILIZATION DATA IN TEACHING LABORATORIES,
AT EASTERN WASHINGTON STATE COLLEGE, WINTER QUARTER 1963

Building	Room Number (1)	Rm.-Fd. Use, 50-Hour Week			Student-Station Use, 50-Hour Week		
		Number of Student- Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use (7)
Hargreaves Ind. Arts	Bas	30	34	68.0	422	14.1	41.5
	100	20	44	88.0	544	27.2	61.8
	101	30	23	46.0	158	5.3	23.0
	102	40	34	68.0	391	9.8	28.8
	104	20	17	34.0	287	14.4	84.7
Music	201	24	45	90.0	535	22.3	49.6
	202	16	30	60.0	172	10.8	36.0
	203	15	27	54.0	151	10.1	37.4
	101	100	43	86.0	1,652	16.5	38.4
	1	10	15	30.0	120	12.0	80.0
Vocal Anx Science	101	19	20	40.0	106	5.6	28.0
	106	24	14	28.0	175	7.3	52.1
	108	20	6	12.0	58	2.9	48.3
	111	24	10	20.0	216	9.0	90.0
	148	32	29	58.0	97	3.0	10.0
	153	24	12	24.0	151	6.3	52.5

TABLE 12a

		Rm.-Pd. Use, 50-Hour Week			Student-Station Use, 50-Hour Week		
Building	Room Number	Number of Student- Stations	Total Room Periods of Use	% of Possible Room-Period Use	Total Student- Station-Periods Occupied	Student Hours per Station	Percent of Station Use When Room is in Use
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Science	171	18	16	32.0	20	1.1	6.9
	173	20	20	40.0	332	16.6	83.0
	174	18	0	0.0	0	0.0	0.0
	180	24	2	4.0	6	.3	15.0
	181	24	8	16.0	30	1.3	16.3
	183	16	6	12.0	18	1.1	18.3
	201	40	10	20.0	172	4.3	43.0
	206	40	10	20.0	184	4.6	46.0
	208	10	9	18.0	36	3.6	40.0
	209	40	12	24.0	106	2.7	22.5
	210	10	0	0.0	0	0.0	0.0
	211	30	35	70.0	132	4.4	12.6
	217	30	41	82.0	231	7.7	18.8
	220	12	7	14.0	27	2.3	32.9
	241	40	1	2.0	15	.4	40.0
	248	24	6	12.0	176	7.3	121.7
	249	24	22	44.0	242	10.1	45.9
	251	24	12	24.0	269	11.2	93.3
	254	12	7	14.0	66	5.5	78.6

TABLE 12a

Building	Rm.-Pd. Use, 50-Hour Week		Student-Station Use, 50-Hour Week				
	Room Number (1)	Number of Student- Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room is in Use (7)
Science	275	24	9	18.0	129	5.4	60.0
	277	24	10	20.0	232	9.7	97.0
	289	50	11	22.0	234	4.7	42.7
	290	24	4	8.0	36	1.5	37.5
Showalter	107	20	18	36.0	225	11.3	62.8
	110	16	17	24.0	169	10.6	62.4
	Stage	20	26	52.0	239	12.0	46.2
	302	30	10	20.0	88	2.9	29.0
	303	25	6	12.0	120	4.8	80.0
	304	25	19	38.0	379	15.2	80.0
	305	30	15	30.0	366	12.2	81.3
Showalter Annex	312	30	37	74.0	519	17.3	46.8
	317	30	32	64.0	350	11.7	36.6
	319	40	15	30.0	298	7.5	50.0
	18	32	35	70.0	585	18.3	52.3
Student Union	20	33	38	76.0	756	22.9	60.3
	KENC	20	50	100.0	441	22.1	44.2
TOTAL	52	1,377	979		12,452		
AVERAGE			18.8	37.7		9.1	48.4

TABLE 13a (Table 13, page 38)

SUMMARY OF WEEKLY UTILIZATION DATA, BY DAY OF THE WEEK, IN
TEACHING LABORATORIES, AT EWSC, WINTER QUARTER 1963

Day of Week	Room-Period Use (50-Hour Week)		Student-Station-Period Use (50-Hour Week)	
	Total Room Periods Used	Average Room- Period Use for Day	Total Student- Station- Periods Occupied	Average Student Hours per Station
	(1)	(2)*	(3)	(4)**
Monday	198	3.8	2,545	1.8
Tuesday	212	4.1	2,664	1.9
Wednesday	207	4.0	2,609	1.9
Thursday	193	3.7	2,416	1.8
Friday	169	3.3	2,228	1.6
TOTAL	979	18.8	12,462	9.1

*Total room-periods used divided by total number of rooms (52)

**Total student-station-periods occupied divided by total number of student-stations (1,377)

TABLE 14a (Table 14, page 39)

SUMMARY OF WEEK UTILIZATION DATA, BY HOUR OF DAY,
IN TEACHING LABORATORIES, AT EWSC, WINTER QUARTER 1963

Hours of the Day	Room-Period Use			Stu.-Sta.-Pd. Occupancy		
	Total No. at Each Hour	% of Total		Total No. at Each Hour	% of Total	
		At Each Hour	Cumula- tive		At Each Hour	Cumula- tive
	(1)	(2)	(3)	(4)	(5)	(6)
7:40	43	4.4	4.4	468	3.8	3.8
8:40	123	12.6	17.0	1,758	14.1	17.9
9:40	136	13.9	30.9	2,205	17.7	35.6
10:40	105	10.7	41.6	1,881	15.0	50.6
11:40	89	9.1	50.7	894	7.2	57.8
12:40	99	10.1	60.8	1,110	8.8	66.6
1:40	143	14.6	75.4	1,738	13.9	80.5
2:40	119	12.2	87.6	1,415	11.4	91.9
3:40	88	8.9	96.5	809	6.5	98.4
4:40	34	3.5	100.0	194	1.6	100.0
TOTAL	979	100.0		12,462	100.0	

TABLE 15a (Table 15, page 41)

SUMMARY OF WEEKLY UTILIZATION IN TEACHING LABORATORIES,
IN ROOMS OF EACH SIZE, EWSC, WINTER QUARTER 1963

Number of Student Stations in Room	Number of Rooms of Each Size (1)	Total Stu.-Sta. in Each Group of Rooms (2)	Room-Period Use 50-Hour Week		Student-Station-Period Use 50-Hour Week		
			Total Room Periods Used (3)	Average Rm.-Pd. Use for Week (4)	Total Stu.-Sta. Periods Occupied (5)	Average Stu. Hrs. per Week per Sta. (6)	Percent of Sta. Use When Room in Use (7)
1-10	3	30	24	8.0	156	5.2	65.0
11-20	16	282	311	19.4	2,855	10.1	52.0
21-30	22	578	406	18.5	4,961	8.6	46.4
31-40	9	337	184	20.4	2,604	7.7	37.7
41-50	1	50	11	11.0	234	4.7	42.7
51-60	0	0	0	0.0	0	0.0	0.0
61-80	0	0	0	0.0	0	0.0	0.0
81-100	1	100	43	43.0	1,652	16.5	38.3
101 & over	0	0	0	0.0	0	0.0	0.0
TOTAL	52	1,377	979	18.8	12,462	9.1	48.4

TABLE 16a (Table 16, page 42)

DISTRIBUTION OF THE NUMBER OF CLASS-PERIOD MEETINGS PER WEEK IN TEACHING LABORATORIES,
BY SIZE OF CLASS, IN RELATIONSHIP TO CAPACITY OF THE ROOM IN WHICH CLASSES WERE HELD,
EMSC, WINTER QUARTER 1963

Room Capacity Group	Number of Class-Period Meetings per Week by Size of Each Group (Enrollment)										Total	Percent	Cumulative Percent
	Week by Size of Each Group (Enrollment)												
	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 80	81 to 100	101 & over				
1 to 10	19	5									24	2.5	2.5
11 to 20	203	94	18								315	32.1	34.6
21 to 30	209	119	49	25							402	41.1	75.7
31 to 40	86	40	44	14							184	18.8	94.5
41 to 50	3	4	0	4							11	1.1	95.6
51 to 60													
61 to 80													
81 to 100													
101 & over	6	7	9	7	8	1	0	0	5		43	4.4	100.0
Total	526	269	120	50	8	1	0	0	5		979		
Percentage Cumulative	53.8	27.5	12.3	5.1	.8	.1			.5				
Percentage	53.8	81.3	93.6	93.6	99.4	99.5			100.0				

TABLE 17a (Table 17, page 4a)

ANALYSIS OF ROOM-PERIOD AND STUDENT-STATION UTILIZATION BY DIVISION AND DEPARTMENT TO WHICH ROOMS WERE PERMANENTLY ASSIGNED, EM3C, WINTER QUARTER 1963

Div. & Dept. to Which Rooms are Permanently assigned	Room-Period Use			Teaching Laboratory Utilization (50 Hour Week)			
	Number of Rooms (1)	No. of Rm-Pds of Use (2)	Av. No. of Pds per Week (3)	No. of Stu-Stan (4)	No. of Stu. Hrs of Occup. (5)	Av. No. of Stu. Hrs per Week per Sta. (6)	% of Sta. Use When Room in Use (7)
<u>Applied Arts</u>							
Home Economics	9	255	28.3	201	2,632	13.1	46.3
Industrial Arts	7	35	17.5	36	396	10.9	62.3
		220	31.6	165	2,238	13.6	63.3
<u>Creative Arts</u>							
Art	11	265	24.1	260	6,675	12.4	51.5
		131	18.7	210	2,023	9.6	51.3
Drama	1	26	26.0	20	239	12.0	46.2
Music	2	38	29.0	110	1,772*	16.1	55.5
Radio	1	30	50.0	20	641	22.1	44.2
<u>Hist. & Soc. Studies</u>							
Business	2	73	36.5	65	1,361	20.6	56.4
		73	36.5	65	1,361	20.6	56.4
<u>Language & Literature</u>							
Language	1	37	37.0	30	519	17.3	46.8
		37	37.0	30	519	17.3	46.8
<u>Science</u>							
Biology	29	349	12.0	221	3,495	6.8	60.0
		81	10.1	206	1,383	6.7	66.3
Chemistry	7	117	18.1	182	861	6.7	26.0
Geography	2	26	13.0	39	166	6.2	32.3
Geology	2	26	12.0	48	391	8.1	67.5
Natural Science	2	28	16.0	64	362	8.2	58.6
Physics	6	73	9.1	186	336	1.8	19.8
TOTAL	52	979	18.6	1,377	12,462	9.1	68.6

*Does not include 1,652 student hours of use tallied weekly in non-student and practice rooms.

PHYSICAL PLANT INVENTORY AND UTILIZATION STUDY,
EASTERN WASHINGTON STATE COLLEGE, 1962-63

Supplement #2, Spring Quarter 1963

Supplement No. 2, Spring Quarter 1963, completes one academic year's study of space utilization at Eastern Washington State College. Supplement No. 1 reported on utilization of instructional facilities for the winter quarter, while the original study, Physical Plant Inventory and Utilization Study, reported utilization data for the fall quarter.

As in the first supplement, table numbers correspond to those used in the fall quarter study. Table numbers bearing the subscript "a" refer to the winter quarter study, while those identified by the subscript "b" refer to the spring quarter report. Thus, Table 1, Table 1a, and Table 1b refer to the fall, winter, and spring quarter studies respectively.

FTE enrollments and course registrations determine the rate of classroom utilization. It is not surprising, therefore, to find lower use rates during the winter and spring quarters, which also have lower FTE enrollments, than during the fall quarter. This is shown on Line 8, Tables 1, 1a, and 1b, where we find an average student-station use of 10.2 hours per week during the fall quarter, 9.3 hours per week for the winter quarter, and 8.3 hours per week during the spring quarter. Present scheduling policies call for all general classrooms to be available for use forty hours per week. Thus, the average weekly station use of 10.2 hours during the peak quarter of the school year actually accounted for only 25 percent of the available scheduling time. As was indicated in the original study, "standard" use of general classrooms would be reached when the rooms are scheduled 70.0 percent of the time with 72.5 percent of the stations occupied, resulting in an average student-station use of 10.3 hours per week. When actual usage is compared to standard use, the 10.2 hours weekly per station during the fall quarter was about 50 percent of standard use ($\frac{10.2 \text{ hours}}{20.4 \text{ hours}}$).

Table 1b presents an inventory and summary of utilization data for general classrooms for the three quarters of the 1961-62 school year.

Table 2b presents a similar summary for teaching laboratories. Data reported in Columns 1, 2, and 3, Table 2b, includes both scheduled and unscheduled student use of teaching laboratories. Again, as would be expected in view of smaller FTE enrollments during the winter and spring quarters, the average student hours per station per week declined in each successive quarter of the school year (Fall: 9.0 hours; Winter: 9.1 hours; and, Spring: 8.1 hours). The 8.9 hours reported in Tables 2 and 2a, line 8, is in error - the corrected figure would read 9.0 hours.

Teaching laboratories at Eastern Washington State College are specialized facilities designed for a particular function. For this reason, the use of teaching laboratories cannot be interchanged as is the case with general classrooms. A general summary which treats all laboratories as though they are of the same type tends to present a distorted picture of their use. Within the total laboratory program, there will probably be some laboratories which are being used at or near peak capacity, while others may be receiving very low utilization. Therefore, it is necessary to study laboratory use by the type of learning situation or department to which the laboratory has been assigned.

Table 17b presents an analysis of student-station use in teaching laboratories, by the division and department to which the room is assigned. The data presented in Table 17b differ in one respect from that presented in Tables 17 and 17a. Unscheduled student hours of use are presented in a separate column (Column 8) in Table 17b, whereas, in Tables 17 and 17a, unscheduled use was included with the scheduled use. Putting the two types of use together has the effect of showing a higher room-period use than was actually scheduled, thus possibly indicating a smaller number of hours available for future program additions. An unscheduled laboratory should be available for scheduling, even though it might result in fewer hours of free time for unscheduled use. In view of this, it seems to be a

substantially larger numbers of students than were present during the spring quarter.

For a discussion on the qualitative aspects of the teaching laboratories at EWSC, the reader should refer to Chapter 7, pages 34-60, of the Physical Plant Inventory and Utilization Study, Eastern Washington State College, 1962-63. It was reported in this study that 31.0 percent of the total laboratory usage was found to have taken place in facilities which were judged seriously deficient on a quality basis. Departments forced to operate in highly deficient facilities will find it increasingly more difficult to maintain a normal rate of growth in future years.

TABLE 1b (Table 1, page 8*)
(Table 1a, page 4**)

SUMMARY OF UTILIZATION DATA FOR GENERAL
CLASSROOMS, EWSC, FOR ACADEMIC YEAR 1962-63

General Classrooms	Summary of Utilization Data		
	Fall Qtr. 1962 (1)	Winter Qtr. 1963 (2)	Spring Qtr. 1963 (3)
1. Number of Rooms	55	58	58
2. Number of Student Stations	2,864	2,993	2,984
3. Assignable Square Feet	44,681	44,773	44,726
4. Total Rm-Fds Used per Week	1,015	968	872
5. Total Stu-Sta-Hrs Used per Week	29,076	27,927	24,702
6. Average Rm-Fds per Room per Week	18.3	16.7	15.0
7. Average % Sta Occupied When in Use	55.1	55.7	55.3
8. Average Stu-Hrs per Sta. per Week	10.2	9.3	8.3
9. Sq. Ft. per 100 Stu-Sta-Hrs	154	160	181
10. Average Sq. Ft. per Stu-Sta.	15.6	15.0	15.0
11. FTE Enrollment***	2,304	2,285	2,131
12. Square Feet per FTE Student	19.0	19.6	21.0
13. Stu-Sta-Hrs Use per FTE Student	12.4	12.2	11.6

*Physical Plant Inventory and Utilization Study, Eastern Washington State College, Cheney, Washington, 1962-63.

**See Supplement #1 to above study.

***Total credit hours registered for divided by 15.

TABLE 2b (Table 2, page 11)
(Table 2a, page 5)

SUMMARY OF UTILIZATION DATA FOR TEACHING
LABORATORIES, EWSC, FOR ACADEMIC YEAR 1962-63

Scheduled Teaching Laboratories	Summary of Utilization Data		
	Fall Qtr. 1962 (1)	Winter Qtr. 1963 (2)	Spring Qtr. 1963 (3)
1. Number of Rooms	52	52	52
2. Number of Student Stations	1,336	1,377	1,364
3. Assignable Square Feet	52,686	53,343	53,343
4. Total Rm-Pds Used per Week*	1,054	979	780
5. Total Stu-Sta-Hrs Used per Week*	12,944	12,462	11,028
6. Average Rm-Pds per Room per Week	20.3	18.8	15.0
7. Average % Stas Occupied When in Use	47.3	48.4	54.0
8. Average Stu-Hrs per Sta. per Week	9.6	9.1	8.1
9. Sq. Ft. per 100 Stu-Sta-Hrs	407	428	484
10. Average Sq. Ft. per Stu-Sta.	39.0	38.7	39.0
11. FTE Enrollment**	2,304	2,285	2,131
12. Square Feet per FTE Student	22.0	23.3	25.0
13. Stu-Sta-Hrs Use per FTE Student	5.5	5.5	5.2

*Includes nonscheduled student use as reported by faculty. (Spring Quarter: 265 room-periods and 4,350 student hours of occupancy tabulated per week of non-scheduled use.)

**Total credit hours registered for divided by 15.

Note: The above summary does not include 1,322 student-hours of occupancy tabulated for Applied Music in music studios and music practice rooms. Neither does the above summary include 2,048 student hours of occupancy tabulated for NPTA activities in the Field House.

TABLE 3b (Table 3, Page 14)
(Table 3a, Page 6)

SUMMARY OF WEEKLY UTILIZATION DATA, BY BUILDING, IN GENERAL CLASSROOMS,
AT EASTERN WASHINGTON STATE COLLEGE, SPRING QUARTER 1963

Building	Number of Rooms (1)	Number of Student Stations (2)	Rm-Pd. Use, 40-Hour Week		Student-Station Use, 40-Hour Week		Percent of Possible Station Use When Room Actually in Use**
			Total Room-Periods of Use (3)	% of Possible Room-Period Use* (4)	Total Student-Station-Periods Occupied (5)	% of Total Station-Periods for Col. 5 (6)	
Science	17	970	303	44.6	7,782	31.6	44.9
Math	15	731	178	29.7	6,013	24.3	68.9
Shawalter	11	801	229	52.0	7,520	30.4	45.2
C. B.	3	109	30	25.0	894	3.6	82.0
F. B.	4	146	55	34.4	1,328	5.4	65.9
L. A.	1	30	6	15.0	82	.3	45.0
Mate	3	73	31	25.8	311	1.3	41.7
Ratcliffe	3	99	26	21.7	563	2.3	65.5
Engineering	1	25	14	35.0	209	.8	60.0
TOTAL	58	2,984	872		24,702	100.0	
AVERAGE			15.0	37.6			55.3

*Not Standard: 72.3% (29 hours of a 40-hour schedule week)

**Not Standard: 70.0% Station occupancy in a scheduled general classroom.

TABLE 4b (Table 4, page 16)
(Table 4a, page 7)

SUMMARY OF WEEKLY UTILIZATION DATA IN GENERAL CLASSROOMS,
AT EASTERN WASHINGTON STATE COLLEGE, SPRING QUARTER 1963

Building	Room Number	Rm-Pd Use, 40-Hour Week			Student-Station Use, 40-Hour Week		
		Number of Student-Stations	Total Room Periods of Use	% of Possible Room-Period Use*	Total Student-Station-Periods Occupied	Student Hours per Station	Percent of Station Use When Room Is in Use**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cadet Hall	201	47	10	25.0	346	6.8	68.0
	202	30	8	20.0	176	5.9	73.7
	203	32	12	30.0	372	11.6	96.6
Field House	201	38	9	22.5	174	4.6	51.1
	204	42	19	47.5	514	12.2	64.2
	205	36	24	60.0	601	16.7	69.5
	206	30	3	7.5	39	1.3	43.3
Engineering	A	25	14	35.0	209	8.4	60.0
	200	30	6	15.0	82	2.7	45.0
Martin	102	48	21	52.5	589	12.3	58.5
	110	90	20	50.0	1180	13.1	65.5
	111	25	3	7.5	42	1.7	56.6
	112	46	21	52.5	652	14.2	67.6
	121	30	5	12.5	90	3.0	60.0
	201	36	0	0.0	0	0.0	0.0
	202	50	16	40.0	586	10.1	63.1

TABLE 4b

Building	Room Number (1)	Rm-Pd Use, 40-Hour Week			Student-Station Use, 40-Hour Week		
		Number of Student- Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use* (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room Is in Use** (7)
Martin	203	34	10	25.0	175	5.1	51.0
	204	36	13	32.5	322	8.9	68.4
	205	50	15	37.5	300	6.0	40.0
	206	80	15	37.5	550	6.9	46.0
	207	34	5	12.5	105	3.1	62.0
	208	34	10	25.0	412	7.6	76.0
	215	70	15	37.5	824	11.8	78.6
	RTV	40	9	22.5	186	4.6	51.1
Music	109	6	10	25.0	45	7.5	75.0
Music Ass.	A	15	12	30.0	191	12.7	105.8
	B	32	9	22.5	75	1.4	15.5
Rathliffe	1	36	18	45.0	403	11.2	62.2
	2	31	8	20.0	160	5.0	62.5
	3	32	0	0.0	0	0.0	0.0
Science	110	24	9	22.5	163	6.8	75.5
	113	66	18	45.0	617	13.4	74.4
	116	40	18	45.0	372	9.3	51.6
	117	34	14	35.0	345	10.1	72.1
	118	35	9	22.5	165	4.6	51.1

TABLE 4b

Building	Rm-Pd Use, 40-Hour Week			Student-Station Use, 40-Hour Week			
	Room Number (1)	Number of Student- Stations (2)	Total Room- Periods of Use (3)	% of Possible Room-Period Use* (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room Is in Use** (7)
Science	138	228	15	37.5	1519	6.7	44.6
	147	32	21	52.5	237	7.4	35.2
	151	58	26	65.0	472	8.1	31.1
	170	27	18	45.0	211	7.8	43.3
	202	90	9	47.5	439	4.9	25.7
	207	40	12	30.0	183	4.6	38.3
	238	30	16	40.0	213	7.1	44.3
	239	80	30	75.0	702	8.8	29.3
	242	70	24	60.0	903	12.9	53.7
	243	30	18	45.0	359	12.0	66.6
	247	58	15	37.5	432	7.4	49.3
	295	48	21	52.5	450	9.4	44.7
Bioscience	105	272	21	52.5	3316	12.2	58.0
	207	70	35	87.5	1426	20.2	57.7
	209A	24	3	7.5	39	1.6	53.3
	217	50	24	60.0	399	8.0	33.3
	306	74	25	62.5	512	6.9	27.6
	307	76	20	50.0	570	7.5	37.5
	308	66	11	27.5	197	3.0	27.2

TABLE 4b

Building	In-Pd Use, 40-Hour Week			Student-Station Use, 40-Hour Week			
	Room Number (1)	Number of Student- Stations (2)	Total Room Periods of Use (3)	% of Possible Room-Period Use* (4)	Total Student- Station-Periods Occupied (5)	Student Hours per Station (6)	Percent of Station Use When Room Is in Use** (7)
Showerlitter	309	40	18	45.0	199	5.0	27.7
	316	40	28	70.0	296	6.0	21.4
	318	50	19	47.5	270	4.4	23.1
	320	30	25	62.5	346	11.5	46.0
TOTAL	54	206	82		2671		
AVERAGE			13.0	37.6		8.3	55.3

*Good Standard: 77.5% (29 hours of a 40-hour week).
 **Good Standard: 70.0% of student stations occupied when the room is in use.

TABLE 3b (Table 3, page 20)
(Table 3a, page 11)

SUMMARY OF WEEKLY UTILIZATION DATA, BY DAY OF THE WEEK,
IN GENERAL CLASSROOMS, AT EWDC, SPRING QUARTER 1963

Day of Week	Room-Period Use (60-Minut Week)		Student-Station-Period Use (60-Minut Week)	
	Total Room- Periods Used	Average Room- Period Use for Per	Total Student- Station- Periods Occupied	Average Student Hours per Station
	(1)	(2)*	(3)	(4)**
Monday	216	3.7	6,029	2.0
Tuesday	143	2.3	4,334	1.3
Wednesday	210	3.6	6,043	2.0
Thursday	132	2.3	3,680	1.2
Friday	171	2.9	4,334	1.3
TOTAL	872	13.8	26,702	8.3

*Total room-periods used divided by total number of rooms (58).

**Total student-station-periods occupied divided by total number of student-stations (2,984).

TABLE 6b (Table 6, page 21)
(Table 6a, page 11)

SUMMARY OF WEEKLY UTILIZATION DATA, BY HOUR OF DAY,
IN GENERAL CLASSROOMS, AT EWDC, SPRING QUARTER 1963

Hour of the Day	Room-Period Use			Stu.-Sta.-Pd. Occupancy		
	Total No. at each hour	% of Total		Total No. at each hour	% of Total	
		At each hour	Cumula- tive		At each hour	Cumula- tive
	(1)	(2)	(3)	(4)	(5)	(6)
7:40	93	10.9	10.9	3,238	13.6	13.6
8:40	183	21.2	32.1	4,893	19.8	33.4
9:40	137	15.7	47.8	3,947	16.0	49.4
10:40	164	18.9	66.7	4,874	19.7	69.1
11:40	110	12.6	79.3	3,066	12.4	81.3
12:40	64	7.3	86.6	2,176	8.8	90.3
1:40	94	10.8	97.4	2,073	8.4	98.7
2:40	23	2.6	100.0	313	1.3	100.0
TOTAL	872	100.0		26,702	100.0	

TABLE 7b (Table 7, page 22)
(Table 7a, page 12)

PERCENT OF POSSIBLE ROOM-PERIOD AND STUDENT-STATION USE, BY HOUR OF DAY
AND DAY OF WEEK, FOR ALL GENERAL CLASSROOMS, AT MISC. SESSIONS QUARTER 1962

Hour of Day	Percent of Possible Use by Hour of Day ^a and Day of Week										X Use Per Hour, Weekly Sessions Available Stu-Sta (11) (12)
	Monday		Tuesday		Wednesday		Thursday		Friday		
	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	Rm-Pd	Stu-Sta	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
7:40	41.4	23.6	24.1	18.7	41.4	29.7	22.4	17.7	34.5	22.9	22.5
8:40	75.9	39.3	53.4	28.3	72.4	37.1	51.7	23.8	45.5	35.5	32.8
9:40	58.6	34.5	34.5	19.7	58.6	34.3	31.0	15.3	53.4	28.5	26.5
10:40	69.0	39.4	51.7	33.8	65.5	38.1	44.8	24.1	51.7	27.8	32.7
11:40	50.0	25.9	29.3	17.2	48.3	25.2	24.1	14.9	37.9	19.6	20.5
12:40	27.6	18.2	20.7	16.8	25.9	16.9	19.0	16.1	17.2	5.0	14.6
1:40	39.7	18.6	25.9	9.7	39.7	18.5	25.9	9.0	31.0	13.8	13.9
2:40	10.3	2.7	6.9	1.8	10.3	2.7	8.6	2.4	3.4	.9	2.1
Percent Use for Days ^b	46.6	25.3	30.8	18.2	45.3	25.3	28.4	15.4	36.9	19.2	

^a58 Room-Periods Available Each Hour Each Day (58 Rooms)

2,984 Student-Station-Periods Available Each Hour Each Day (2,984 Stu-Sta)

^b466 Room-Periods Available Each Day (58 Rooms x 8 Hours)

23,872 Student-Station-Periods Available Each Day (2,984 Stu-Sta x 8 Hours)

^c290 Room-Periods Available Each Hour Each Week (58 Rooms x 5 Days)

14,920 Student-Station-Periods Available Each Hour Each Week (2,984 Stu-Sta x 5 Hours)

TABLE 8b (Table 8, page 24)
(Table 8a, page 13)

SUMMARY OF WEEKLY UTILIZATION IN GENERAL CLASSROOMS,
FOR ROOMS OF EACH SIZE, EMSC, SPRING QUARTER 1963

Number of Student Stations in Room	Number of Rooms of Each Size	Room-Period Use			Student-Station-Period Use		
		Total Room Periods Used	Average Rm.-Pd. Use for Week	Total Stu.-Sta. in Each Group of Rooms	Total Stu.-Sta.-Periods Occupied	Average Stu. Mrs. per Week per Sta.	Percent Sta. Use When Room in Use
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-10	1	10	10.0	6	45	7.5	75.0
11-20	1	12	12.0	15	191	12.7	105.8
21-30	12	128	10.7	335	1,969	5.9	55.1
31-40	17	200	11.8	606	3,999	6.6	55.9
41-50	10	196	19.6	476	4,357	9.2	46.9
51-60	5	76	15.2	280	1,977	7.1	46.7
61-80	8	175	21.8	386	5,710	9.7	44.5
81-100	2	39	19.5	180	1,619	9.0	46.2
101 & over	2	36	18.0	500	4,835	9.7	52.9
TOTAL	58	872	15.0	2,981	26,792	8.7	33.1

TABLE 96 (Table 9, page 26)
(Table 96, page 14)

DISTRIBUTION OF THE NUMBER OF CLASS-PERIOD MEETINGS PER WEEK BY GENERAL CLASSROOM,
BY SIZE OF CLASS, IN RELATIONSHIP TO CAPACITY OF THE ROOM IN WHICH CLASSES WERE HELD,
WISC, SPRING QUARTER 1963

Room Capacity Group	Number of Class-Period Meetings per Week by Size of Each Gen. Classroom															Total No. of Classes	Total No. of Students
	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	101 to 110	111 to 120	121 to 130	131 to 140	141 to 150		
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150		
1 to 10	10															10	1.1
11 to 20	0	12														12	1.4
21 to 30	31	60	21	6												118	14.6
31 to 40	44	54	70	72	6											210	22.9
41 to 50	61	67	67	63	14	4										186	22.6
51 to 60	9	24	23	6	4	10										76	9.7
61 to 80	6	35	35	33	10	10	9	1								173	20.1
81 to 100	3	9	0	12	4	3	4	4								39	4.3
101 & over	0	0	0	0	0	0	3	0	0	0						30	3.1
TOTAL	144	243	224	122	44	43	10	23	10	3	0	23				672	100.0
Percentage Cumulative	16.5	27.9	27.9	14.0	3.3	3.9	2.1	.4									
Percent	16.5	44.4	72.3	86.3	89.6	94.7	96.8	99.4	99.8	99.8	99.8	100.0					

TABLE 17A (Table 17, page 18)
(Table 17a, page 17)

A COMPARISON OF SMALL BUSINESS CLASS-SECTION MEETING DATA
WITH A "BEST-FIT" SCHEDULE BASED ON THE NUMBER OF STUDENTS
ENROLLED IN EACH CLASS SECTION, 1961, 1962 (TABLES 17A, 17B)

Term Enrollment Range	No. Sec. in each Range	Actual Class-Section Meeting Data by Term of Each Size			"Best-Fit" Class-Section Meeting Data by Number of Students Enrolled		
		Number Sections	Percent of Total	Cumulative Percent	Number Sections	Percent of Total	Cumulative Percent
		(1)	(2)	(3)	(4)	(5)	(6)
1-10	1	10	1.0	1.0	100	10.0	10.0
11-20	1	10	1.0	2.0	100	10.0	20.0
21-30	10	120	12.0	12.1	120	12.0	32.0
31-40	17	200	20.0	42.0	120	12.0	44.0
41-50	10	100	10.0	52.0	60	6.0	50.0
51-60	3	70	7.0	59.0	40	4.0	54.0
61-70	8	170	17.0	76.0	10	1.0	55.0
71-80	2	20	2.0	78.0	5	.5	55.5
81-100	2	30	3.0	81.0	25	2.5	57.5
TOTAL	30	672	100.0		672	100.0	

Table 110 (Table 11, page 24)
(Table 11a, page 14)

SUMMARY OF CEMENT UTILIZATION AND, BY EXTENSION, OF MANUFACTURED LUMBER AND
AT MILL, SAWING PLANT AND

Building	Number of Rooms (1)	Number of Rooms (2)	Total Number of Rooms (3)	Room-Feet and Use		Use of Manufactured Lumber	Manufactured Lumber		Use of Manufactured Lumber	Use of Manufactured Lumber	Use of Manufactured Lumber
				Room-Feet (4)	Use (5)	Room-Feet (6)	Use (7)	Room-Feet (8)	Use (9)	Room-Feet (10)	Use (11)
Science	29	721	130	3,3	11,0	3,346	34,1	3,3	34,1	34,1	34,1
Shower	10	246	160	14,0	34,0	3,317	34,3	14,0	34,0	34,0	34,0
Ind. Arts	7	162	80	12,7	31,6	3,340	32,7	7,3	32,7	32,7	32,7
S. Annex	2	63	30	19,0	30,0	3,340	31,1	19,0	30,0	30,0	30,0
Music	1	100	23	23,0	30,0	3,340	32,0	23,0	30,0	30,0	30,0
Bergstrom	1	20	20	20,0	60,0	3,340	3,7	20,0	60,0	60,0	60,0
Sto. Union	1	20	13	13,0	30,0	3,340	3,0	13,0	30,0	30,0	30,0
Total Annex	1	10	9	9,0	19,0	3,340	3,0	9,0	19,0	19,0	19,0
TOTAL	52	1,346	313			9,478	100,0				
ATTACH				9,9	19,0					9,9	19,0

*Does not include manufactured lumber used by students.

TABLE 128

Building	Room Number (1)	Number of Student Stations (2)	Reg.-Pt. Exp. During Year		Student-Exp. During Year		Percent of Station Use When Room Is in Use
			Total Room Periods of Year (3)	% of Possible Room-Periods Exp. (4)	Total Student-Station-Periods Occupied (5)	Student-Station-Periods per Student (6)	
Science	290	24	10	20.0	116	6.0	60.0
	107	20	16	32.0	273	13.0	80.3
	110	16	19	30.0	260	16.0	80.6
	Stage	20	17	34.0	119	6.0	33.3
	302	30	6	12.0	62	1.4	23.3
	303	23	6	12.0	102	4.1	60.3
	304	23	17	34.0	320	13.3	70.3
	305	30	12	24.0	123	3.1	42.3
	317	30	16	32.0	400	13.6	83.0
	312	30	27	34.0	347	10.9	31.1
Shewalter Annex	319	60	16	20.0	397	7.4	32.0
	18	20	13	30.0	370	11.6	77.3
	20	33	23	66.0	396	10.0	30.3
Sta. Union	KDAC	20	13	30.0	213	12.7	86.7
	Total Ann.	10	9	18.0	96	9.6	97.0
TOTAL		1,316	313		8,478		
AVERAGE			9.3	19.3		6.4	54.6

*Does not include unscheduled laboratory use by students.

TABLE 13b (Table 13, page 50)
(Table 13a, page 50)

SUMMARY OF WEEKLY UTILIZATION DATA, BY DAY OF THE WEEK, IN
TEACHING LABORATORIES, AT OWSU, SPRING QUARTER 1963

Day of Week	Room-Period Use (30-Room Week)		Student-Station-Period Use (30-Student Week)	
	Total Room Periods Used	Average Room Period Use per Day*	Total Student- Station- Periods Occupied	Average Student- Station per Station**
	(1)	(2)	(3)	(4)**
Monday	106	2.0	1,828	1.3
Tuesday	117	2.3	1,872	1.4
Wednesday	105	2.0	1,851	1.4
Thursday	109	2.1	1,640	1.2
Friday	78	1.5	1,387	1.0
TOTAL	515		8,678	

*Total room-periods used divided by total number of rooms (32).

**Total student-station-periods occupied divided by total number of student-stations (1,364).

TABLE 14a (Table 14, page 18)
(Table 14a, page 51)

MINUTES OF VEHICLE UTILIZATION DATA, BY HOUR OF DAY,
IN CLINICAL LABORATORIES, AT HSC, SPRING QUARTER 1963

Hour of the Day	Room-Period Use			Stu.-Sta.-Per. Occupancy		
	Total No. on Each Hour*	% of Total		Total No. on Each Hour**	% of Total	
		on Each Hour	Cumula- tive		on Each Hour	Cumula- tive
	(1)	(2)	(3)	(4)	(5)	(6)
7:40	38	7.6	7.6	100	6.7	6.7
8:40	88	18.7	26.3	1,422	18.4	25.1
9:40	63	11.7	38.0	1,233	14.2	39.3
10:40	83	14.1	52.1	1,061	12.7	52.0
11:40	47	9.1	61.2	783	9.2	61.2
12:40	46	9.1	70.3	720	8.3	69.5
1:40	67	12.9	83.2	931	11.0	80.5
2:40	18	11.2	94.4	703	8.1	88.6
3:40	27	3.2	97.6	329	3.8	92.4
4:40	2	.4	100.0	100	1.1	100.0
TOTAL	313	100.0		8,678	100.0	

*260 Room-periods available each hour (52 rooms x 5 days per week)

**6,820 Student-station-periods available each hour (1,364 student-stations x 5 days per week)

TABLE 150 (Table 13, page 41)
(Table 150, page 21)

SUMMARY OF WIRELESS UTILIZATION AND RESEARCH LABORATORY USE,
IN TERMS OF EACH SIZE, SIZE, PERIOD (TABLE 150)

Baltimore - 2020 Term - Post Test Data									
Number of Student Stations in Room	Number of Rooms of Each Size	Total Sta.-Sta. in Each Group of Rooms	Room-Per-Test Use			30-Day-Week			Percent of Sta. Sta. when Room is in Use
			30-Day-Week		Average Sta.-Sta. Use per Week	Total Sta.-Sta. Periods Grouped	Average Sta.-Sta. Use per Week		
			Total Room Periods Used	Total Sta.-Sta. Periods Grouped					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1-10	3	30	20	136	7.0	9.0	136	9.0	72.9
11-20	16	286	132	2,300	9.5	9.5	2,300	9.5	85.3
21-30	22	363	222	3,333	10.1	10.1	3,333	10.1	59.6
31-40	9	337	83	1,707	9.2	9.2	1,707	9.2	33.6
41-50	1	50	12	120	12.0	12.0	120	12.0	20.0
51-60	0	0	0	0	0.0	0.0	0	0.0	0.0
61-80	0	0	0	0	0.0	0.0	0	0.0	0.0
81-100	1	100	23	1,000	23.0	23.0	1,000	23.0	41.4
101 & over	0	0	0	0	0.0	0.0	0	0.0	0.0
TOTAL	52	1,364	313	6,676	9.9	9.9	6,676	9.9	66.6

TABLE 16a (Table 16, page 62)
(Table 16a, page 22)

DISTRIBUTION OF THE NUMBER OF CLASS-PERIOD MEETINGS PER WEEK FOR EACH OF THE 100 ROOMS, BY SIZE OF CLASS, IN RELATIONSHIP TO CAPACITY OF THE ROOM IN WHICH CLASSES WERE HELD.
BOSC, SPRING QUARTER 1963

Room Capacity Group	1 to 10	11 to 20	Number of Class-Period Meetings per Week by Size of Each Group (Thomallman)										Total	Percentage	Cumulative Percent
			21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100					
1 to 10	16	5										21	6.1	6.1	
11 to 20	32	79	61									142	39.3	33.6	
21 to 30	57	111	50	6								224	62.1	78.7	
31 to 40	16	19	64	6								85	16.1	92.8	
41 to 50	8	4										12	2.3	95.1	
51 to 60															
61 to 80															
81 to 100	2	5	1	7	6							15	6.9	100.0	
Total	129	223	136	17	6	0	0	0	0	0		313			
Percentage Cumulative	25.1	63.1	26.5	2.3	1.2										
Percent	25.1	68.2	94.7	98.0	99.2							100.0			

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TABLE 17b (Table 17, page 64)
(Table 17a, page 23)
ANALYSIS OF ROOM-PERIOD AND STUDENT-STATION UTILIZATION BY DIVISION AND DEPARTMENT
TO WHICH ROOMS WERE PERMANENTLY ASSIGNED, EMSC, SPRING QUARTER 1963

Div. & Dept. to Which Rooms are Permanently assigned	Room-Period Use				Scheduled Laboratory Utilization (50-Hour Week)				Unscheduled Lab. Use	
	Number of Rooms	No. of Rm-Pds of Use	Av. No. of Pds per Week per Rm.	No. of Stu- Stas	No. of Stu. Mrs of Occup.	Av. No. of Stu. Mrs per Week per Sta.	% of Sta. Use When Rooms in Use	No. of Stu. Mrs Occup. per Week		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			
Applied Arts	9	124	13.8	198	1,733	8.8	63.8	792		
Home Economics	2	35	17.5	36	543	15.1	86.3	120		
Industrial Arts	7	89	12.7	162	1,190	7.3	57.5	672		
Creative Arts	11	157	14.3	350	2,150	9.0	62.9	820		
Art	7	91	13.0	200	1,648	8.2	63.1	334		
Drama	1	17	17.0	20	119	6.0	35.3	225		
Music	2	34	17.0	110	1,130	10.3	60.6	*		
Radio	1	15	15.0	20	253	12.7	84.7	261		
Hist. & Soc. Studies	2	38	19.0	65	964	14.8	77.9	391		
Business	2	38	19.0	65	964	14.8	77.9	391		
Language & Literature	1	37	37.0	30	567	18.9	51.1	**		
Foreign Language	1	37	37.0	30	567	18.9	51.1	**		
Science	29	159	5.5	721	2,264	3.1	56.4	347		
Biology	8	72	9.0	206	898	4.4	48.9	155		
Chemistry	7	30	4.3	200	380	1.9	44.2	108		
Geography	2	8	4.0	39	120	3.1	77.5	64		
Geology	2	22	11.0	48	432	9.0	81.8	--		
Natural Science	2	20	10.0	44	372	8.5	85.0	20		
Physics	8	7	.9	184	62	.3	33.3	--		
TOTAL	52	515	9.9	1,364	8,678	6.4	64.6	2,350		

*Applied Music courses accounted for 1,522 student-hours of occupancy per week in music studios and practice rooms

**Included in the scheduled utilization (Column 5)